APRIL 1953

News Magazine of the American Standards Association, Incorporated

AIRCRAFT INDUSTRY BUILDS WITH STANDARDS

Guard Duty from Above, Navy's HUP-1 helicopter takes
USS Leyte off from aircraft carrier USS Leyte
for plane guard duty. Ready maintenance of Navy and Air Force planes is essential for performance of military missions. Aircraft industry's coordinated standards provide interchangeable parts for maintenance of planes in any part of the world.

PAGE 104

Marginal Notes

What to Look for in Our Next Issue—

A large part of the research data now being developed in this country is in danger of being lost, Dr W. J. Harris, Jr, executive secretary of the Minerals and Metals Advisory Board, National Academy of Sciences, told ASA's Standards Council April 2. His challenge to American industry to find some means of translating this research into standards and specifications for use in production will be one of the principal features in the May issue of STANDARDIZATION.

Another important feature is an analysis of the A-B-C discussions on fits between cylindrical parts. "Does Industry Want American Standard Tables of Recommended Fits?" this article asks.

Fourth National Standardization Conference—

Theme of the Fourth National Standardization Conference is to be "Voluntary Standards—Symbol of Industrial Freedom." Scheduled for October 19, 20, and 21, the conference will be held at The Waldorf-Astoria, New York. Preliminary plans are now well under way.

Quality Control is the topic selected for discussion at an all-day meeting October 20. Technical aspects will be considered in the morning; in-plant application will be taken up in the afternoon.

A seminar on industrial noise, a consumer clinic, and presentation of annual awards are also scheduled as outstanding features.

The thirty-fourth annual meeting of the Association will offer ASA's members, Board of Directors, and Standards Council an opportunity to exchange ideas on ASA methods and problems.

Standards Meeting in California—

Since headquarters of the American Standards Association are in New York, standardization sometimes seems to be considered mostly an eastern phenomenon. Too seldom do representatives of ASA have an op-

portunity to exchange views with industrial and technical leaders on the West Coast.

Now, for the first time, ASA Member organizations are meeting in California. The occasion is a luncheon at the Biltmore Hotel, Los Angeles. The date is May 21. All Company Members are invited. Representatives of non-member companies with an interest in standardization will also be welcome.

K. T. Norris, president of the Norris-Thermador Corporation, will preside. Speakers will be Roger E. Gay, president of The Bristol Brass Corporation, and president of the American Standards Association; K. B. Clarke, Western Electric Company, chairman of the Company Member Conference; and Vice Admiral G. F. Hussey, Jr, managing director of the ASA.

Those interested in attending this luncheon are invited to make reservations through the office of Mr K. T. Norris, Norris-Thermador Corporation, P.O. Box 15384, Vernon Branch, Los Angeles 58, California. Reservations may be made by enclosing a check for $3.00 per person.

Nominations for ASA Awards—

Nominations are now being received for this year's recipients of The Howard Coonley Medal and The Standards Medal. You are invited to send your nomination to ASA's Managing Director before July 1.

The Howard Coonley Medal goes to an executive who by his practice and preachments has furthered the national economy through voluntary standardization.

The Standards Medal goes to an individual who has shown leadership in the development and application of voluntary standards.

Submit your nominations in quadruplicate on plain paper without indicating the source. Also send a letter of transmittal. Give in detail the accomplishments that justify the award.

Our cover photo — Courtesy Piasecki Helicopter Corporation

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

Standardization

Formerly Industrial Standardization

ASA

Reg. U. S. Pat. Off.

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APRIL, 1953 VOL. 24, NO. 4

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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Tests Guide Track Bolt Design

by C. B. Bronson

TESTS carried out according to sound engineering principles have replaced the use of empirical methods in developing standards for track bolts and nuts. Thus it is possible for the first time to provide recommended dimensions and tolerances based on actual knowledge of strength factors. This information is the basis for a new edition of the American Standard on Track Bolts and Nuts, just published as B18.10-1952. With this new standard the railroads will be able to specify standard types and sizes designed for strength and service for the several million dollars worth of track bolts and nuts put into use each year.

Over the nation's 225,000-mile network of main line railroad tracks today's powerful locomotives pull longer trains at higher sustained speeds than ever before. Plans for the future show this trend likely to develop even further, with indications that within the next ten years Diesel locomotives will have practically supplanted steam power on the railroads throughout the entire country.

Stronger, heavier rails and better roadbeds, calling for better and more dependable fastenings, make this traffic possible. Although Diesel engines are lighter and have less impact effect than heavier steam locomotives, the moving load of these fast locomotives and of the long trains of passenger cars and freight cars they pull, impose complicated torsional strains and stresses on tracks and on bolts and nuts that hold them together. Probably only strains imposed on fasteners by airplanes in flight exceed those of the railroad.

The question of standardization of track bolts and nuts had already been taken up by a committee under the procedure of the American Standards Association as long ago as 1924. As a result of the work of this committee, sponsored by the Society of Automotive Engineers and the American Society of Mechanical Engineers, American Standards had been in use since 1930, which provided two series of standard dimensions for track bolt heads.

In 1947, however, after active development of railroad equipment during the war, a reorganized committee found that designs and dimensions of track bolts and nuts had "grown like Topsy." Some types and sizes were no longer necessary. These were included in a multiplicity of variations in design and dimensions, which complicated manufacturers' stock sizes, dies, and tools, and added to users' costs.

Before making any decisions as to which sizes and designs to retain and which to discard, however, the committee looked over the situation to try to determine which were giving the best service. They found that they had plenty of information on the strength of the bolt itself. Barring unusual service conditions such as excessive exposure to dripping brine, bolts could be expected to last the entire life of the rail.

The nut, however, was the principal problem before the committee. There were hundreds of combinations—thick nuts and thin nuts; nuts with corners; and nuts with scalloped edges; also recessed nuts. Some were round; some were flat; and some were curved. The face of different nuts for the same size bolt often varied in size. For one particular size bolt there were nuts of $1\frac{1}{2}$ in., $1\frac{11}{16}$ in., and $1\frac{5}{8}$ in. face.

Before it could approach a decision as to the proper design of a nut, the committee had to be able to calculate its holding power and the minimum breaking load of the bolt. The requirement was for holding power sufficiently high to break the bolt rather than stirp the threads under load.

The method of calculating the breaking strength of the bolt was one of the key factors in the problems. The committee found that many engineers have calculated the breaking strength of bolts from the area of a circle having the diameter of the root of the thread. However, a bolt actually breaks in tension in an irregular section which follows, more or less, the helix at the root of the thread.

This empirical system of figuring was one of the reasons for the multplicity of design. Knowing that track bolts and nuts are subjected to unusual torsional strains, designers were inclined to add a safety factor which in many cases required the use of unnecessarily heavy material.

The committee made arrangements to check the empirical formula by carrying out careful and accurate tests.

Static tension tests were made at the Republic Steel Corporation's plants in Cleveland, Ohio. Three sizes of C1040 steel, annealed to give uniform properties, were used. Three samples of each full size bar and three threaded samples from the same bar were tested, using highly accurate gages and instruments. The same materials were used from the same heat, or even the same rod from the same heat, in order to assure that the physical characteristics of the test material would be constant. The re-

Mr Bronson is Assistant Chief Engineer Maintenance of Way of the New York Central System. He is chairman of Subcommittee 4 on Track Bolts and Nuts of Sectional Committee B18, Dimensional Standardization of Bolts, Nuts, Rivets, Screws, and Similar Fasteners. This committee works under the sponsorship of the Society of Automotive Engineers and the American Society of Mechanical Engineers.

Powerful Diesel engines add to strains borne by railroad tracks and fastenings.

Train: New York Central System
Track Bolts: Reproduced from Fasteners, Vol. 5, No. 4

sults of these tests showed that the ultimate strength of the threaded section, calculated from the mean area of the pitch and root diameters, is very nearly the same as that of the unthreaded bar.

Analysis of these tests indicated the desirability of making a series of torque tests. These were carried out at the Roanoke, Virginia, Shops of the Norfolk & Western Railway, using special equipment devised for the purpose. These tests simulated more nearly actual use of track bolts and nuts in service.

Conclusions arrived at as a result of these tests may be helpful to other committees working on bolts and nuts even though their service problems may not make the data as important to them as it is to the railroads. The conclusions were outlined in an article published in *Fasteners,** Volume 5, Number 4, which describes the tests in some detail. The article was written by R. P. Winton, Testing Engineer, Maintenance of Way, Norfolk & Western Railway Company, who is a member of Subcommittee 4 on Track Bolts and Nuts of Sectional Committee B18. Mr Winton outlines the conclusions as follows:

Static Tension

1. The mean area of the thread should be used to calculate the breaking strength of bolts.
2. There is very little difference in the stripping strength of free fit and wrench fit in static tension.
3. There is very little difference in the stripping strength of nuts with the chamfer turned in or out.
4. There is very little difference in the stripping strength of nuts $1\frac{1}{2}$ in. wide and $1\frac{5}{8}$ in. wide.
5. Low carbon nuts having a thickness equal to the nominal diameter of the bolt have a stripping strength in direct tension greater than a Grade 2 heat-treated bolt.
6. High carbon nuts having a thickness equal to the nominal diameter of the bolt have a stripping strength in direct tension very much greater than a Grade 2 bolt.
7. Low carbon recessed nuts have considerably less stripping strength than plain nuts, but strength is proportional to the actual threaded thickness.
8. The stripping strength of nuts is independent of the pitch diameter of the bolt provided the major diameter of the bolt remains constant.
9. Reducing the major diameter of the bolt down to the minimum of Class 1 reduces the stripping strength of the nut slightly. However, it is still greater than the nominal breaking strength of a Grade 2 heat-treated bolt.

Tension Applied by Turning the Nut

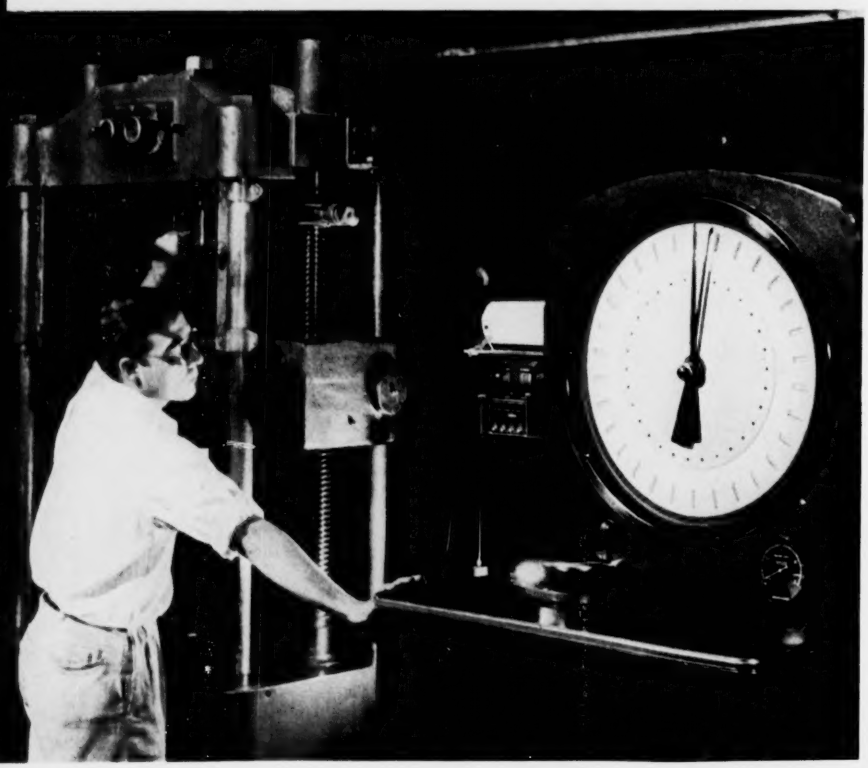
10. The stripping strength of free fit nuts, when the tension is applied by turning the nut, is considerably less than when the load is applied in a tensile testing machine.
11. The stripping strength of the nut, when the tension is applied by turning the nut, is much less with wrench fit nuts than free fit nuts.
12. Spring washers seem to reduce the stripping strength of the nut when the load is applied by turning the nut.

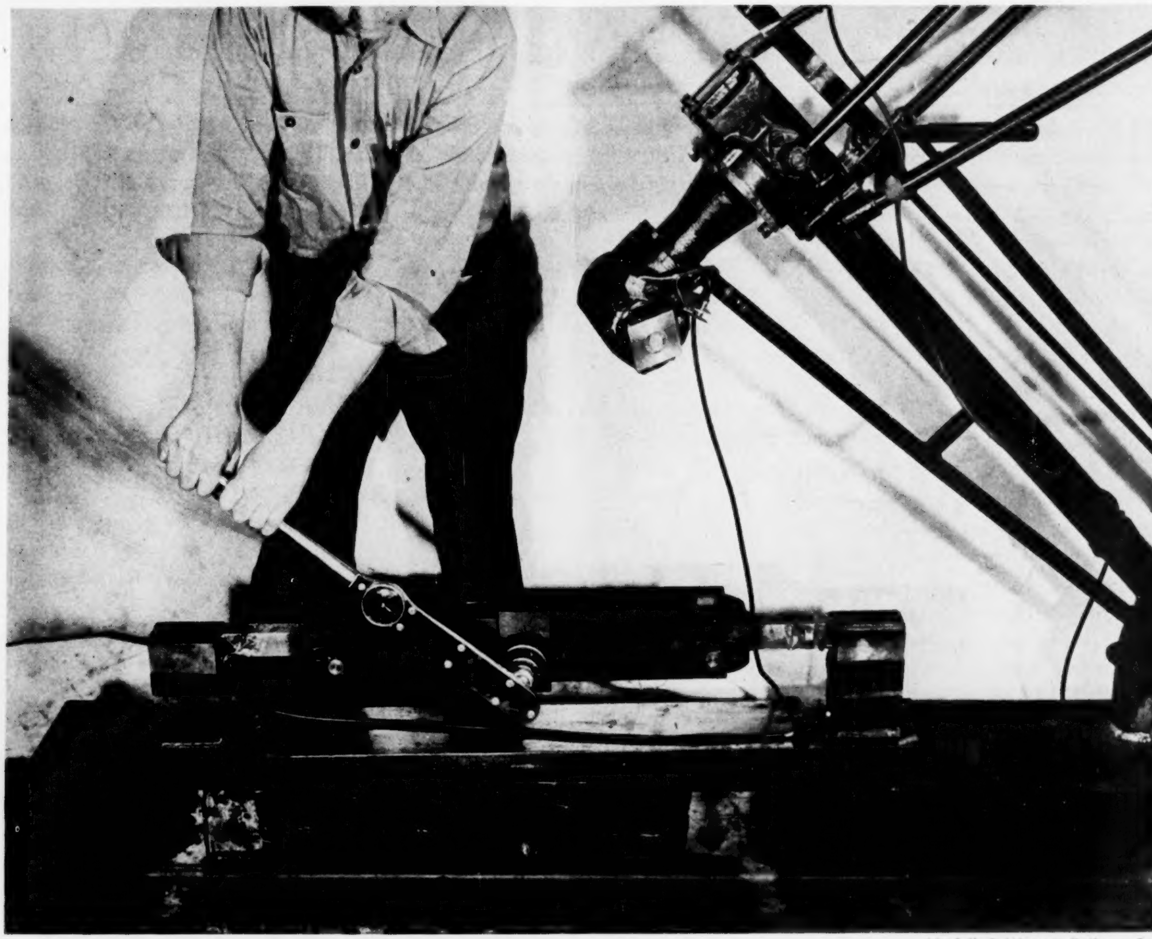
Following completion of this study, the American Railway Engineering Association assisted in carrying out additional tests with a power wrench. The purpose was to find out the effect of free fit or wrench fit, lubrication, spring washers, and speed of turning the nut as related to the strength of both bolt and nut. The machine used recorded simultaneous torque and tension in track bolts while the nut

* Published by the American Institute of Bolt, Nut and Rivet Manufacturers, 1550 Hanna Building, Cleveland 15, Ohio.

This Riehle Testing Machine was used by Republic Steel Corporation in making static tension tests on steel bars and threaded samples. Tests were used by B18's Subcommittee 4 to check results obtained in calculating breaking strength of threaded bolts.

Republic Steel Corp





Norfolk & Western Railway Co

Special equipment devised by the Roanoke, Virginia, shops of the Norfolk and Western Railway simulated actual use conditions. Torque tests made with this equipment gave important data on strength of track bolts and nuts.

was being turned at various speeds with a power track wrench.

All of these data were taken into consideration by the committee in preparing its 1952 edition of the American Standard. The bolt in the new standard is very similar to that given in the 1930 edition, but the new engineering data are reflected in the provisions for the nuts. In addition, each table of sizes, for both bolts and nuts, lists a number of recommended standard sizes, with a table of additional sizes that are now in use but not recommended for new design. Tolerances for the heads, necks, and bodies of track bolts and the dimensions of the nuts have been made adequate for good manufacturing practice. It is expected that manufacturers will use working gages in order to keep within the limits and will thus insure that their product will pass inspection by the user.

Dimensions across flats in the table listing track nuts are the same as those in the American Standard Heavy Series of screws and nuts. However, the thickness of the nut is $\frac{1}{8}$ in. greater for low carbon steel than that recommended for the American Standard Heavy Nut. This is because the torque tests established that an additional $\frac{1}{8}$ in. thickness is required for low carbon-steel nuts to break heat-treated carbon-steel track bolts. Further, the thicker nut offers a better wrench hold with the 60-deg chamfer, particularly when used with joint bars having a heavy bead on the top. Results of the torque tests showed, however, that medium carbon nuts of American Standard Heavy Square dimensions are capable of breaking heat-treated carbon-steel track bolts. When medium carbon-steel nuts are specified, the American Standard Heavy Square Nuts listed in American Standard B18.2 are recommended.

Subcommittee 4 on track bolts and nuts has worked closely with committees of the American Railway Engineering Association and the American Iron and Steel Institute. These committees have given important assistance and cooperation in developing the new standard and have indicated that they concur with the recommendations of the standard.

The interest shown by all the groups who have been represented in the work of this subcommittee and on the sectional committee encourages the expectation that the standard will be widely used, with consequent savings in materials, in inventory, in tools and dies, and with additional satisfaction to the user.

This paper was presented at a meeting of the Standards Engineers Society on January 26, 1953 at Philadelphia, Pennsylvania.

STANDARDIZATION IN

TO understand standardization in the aircraft industry, first you must understand the industry. There are 22 major producers of aircraft, exclusive of power plants, in the United States. These 22 producers have as their biggest customer our government.

In the same way that your customers specify the requirements of your products, Uncle Sam specifies a lot of the requirements of the aircraft industry. After we deliver airplanes to the various branches of our government, they assume, with our assistance, the maintenance of these airplanes all over the world. The components of different aircraft must of necessity reach a point of standardization that permits ready maintenance and high availability so necessary to performance of military missions. Twenty-two companies making products for the same customer must coordinate on basic standards for the good of the customer. To that end, and for effective standardization in aircraft, the Aircraft Industries Association, through the National Aircraft Standards Committee, coordinates the requirements among these 22 producers of aircraft and the branches of the Department of Defense, namely the Navy Bureau of Aeronautics and the Air Force.

Today, NASC is the body officially representing the aircraft industry on all aircraft standardization matters. It is a technical component of the Aircraft Technical Committee (ATC) of the AIA. ATC is the aircraft industry policy group composed of the manufacturer's engineering executives.

Mr Hurlburt was associated with the helicopter industry for 14 years. He served with the Curtiss Wright Corporation, the Fairchild Engine and Airplane Corporation, and the Piasecki Helicopter Corporation. At the time this paper was presented, he was Chief Standards Engineer at Piasecki. He is a former member of the National Aircraft Standards Committee and chairman of the Helicopter Standards Committee. Since presenting this paper, Mr Hurlburt has become Director of Engineering for Klincher Locknut Corporation, Indianapolis, Indiana.

The NASC is the outgrowth of informal meetings held by Aircraft Standards Engineers over 15 years ago. Both the Eastern Standards Committee and Western Standards Committee were organized in 1939 and formalized into a national body a year before Pearl Harbor. For geographical convenience, the two divisions remain, yet function as a national body.

The NASC meets regularly to discuss mutual problems of standardization as well as to coordinate and develop NAS Standards, which are the official non-government standards of the aircraft industry.

After establishment of an NAS standard, the standard is distributed and the Air Force and Navy are requested to recognize it as a non-government standard acceptable for use in their requirements. Eventually, if usage warrants, the standard is adopted by the government in their system.

NAS Standards, like other industry standards, are more flexible than government standards. Our standards are under our direct control. Government standards affecting the aircraft industry must, by law, be coordinated with all other Departments of Defense.

Last June, Congress enacted Public Law 436 known as the Defense Cataloging and Standardization Act. Essentially this law provides for a Defense Supply Management Agency responsible directly to the Secretary of Defense. This is the first time government standardization has operated as a *direct* function. Standardization within our Department of Defense is no longer under agencies that acted in an advisory capacity with nebulous authority. The DSMA function includes developing military specifications and standards and eliminating duplication of standards and specifications. The Director of the DSMA, Admiral J. W. Fowler, is empowered to make all final decisions subject to appeal only to the Secretary of Defense.

Let me tell you of a few of the standardization projects, past and present, in the aircraft industry.

Blind Rivets—

This project recently resulted in release of Military Standards for mechanically expanding rivets and explosive rivets.

In the past it was necessary to specify blind rivets by manufacturers' part number. Result was interchangeable parts under several part numbers. Now, under the new MS standards, parts can be stocked by *one* number and supplied by several manufacturers. Tooling standardization for blind rivets has progressed to the point where proprietary tools have interchangeable components to permit almost universal driving of all types of rivets with a minimum number of tools. Project sponsor for NASC was the McDonnell Aircraft Corporation of St. Louis.

Aircraft Metals Stock List—

This is a continuing project of NASC, in cooperation with warehouses' suppliers of metals, that has been in operation since 1946. Aircraft manufacturers and metal distributors have collaborated to list the most used aircraft materials, choosing specifications, hardness, finish, and size of those items which have been agreed upon, to obtain an optimum of use from a minimum number of stock variables. This list is a voluntary agreement between suppliers and consumers, completely revised annually. The 1953 Aircraft Metals Stock List is distributed by the Aircraft Industries Association, 610 Shoreham Building, Washington 5, D. C. The preparation of this list for the two divisions is being carried on by Piasecki Helicopter Corporation and Northrop Aircraft, Inc.

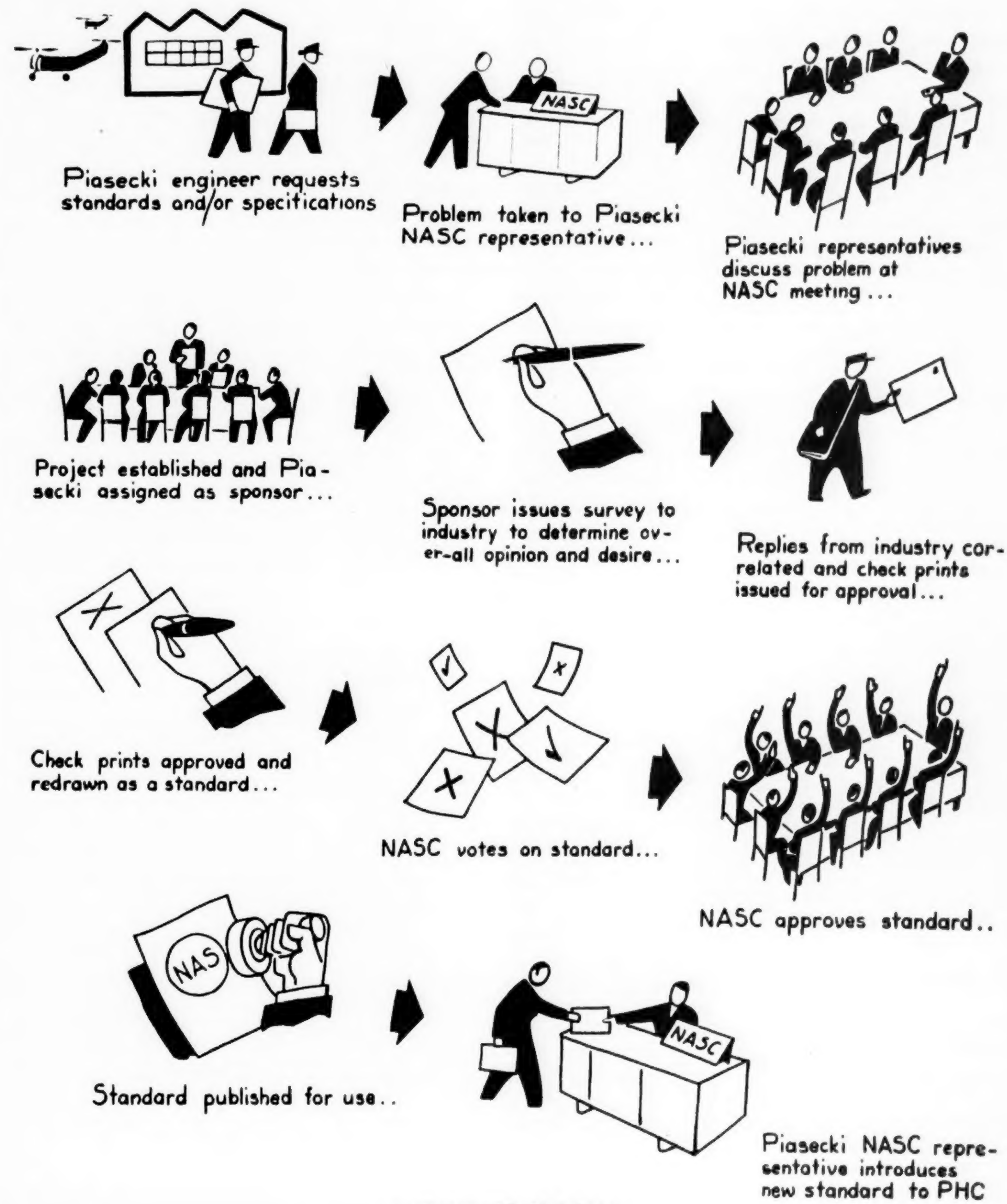
THE AIRCRAFT INDUSTRY by C. C. Hurlburt

External Wrenching Bolt—

The twelve-point external wrenching bolt project has been in operation for over a year. The purpose is to develop a high tensile (180,000 psi) bolt for structural fastening in aircraft. Sponsorship of this project is by Chance Vought Aircraft Corp.

Rivet Symbols—

A project to develop standard rivet symbols for aeronautical drawings was undertaken by the Lock-



A STANDARD IS BORN

heed Aircraft Corporation. Because of the large number of rivet patterns used in aircraft, detailing on drawings is not economical or necessary. This NAS design standard will give rivet callouts and coding in a standard language for all aircraft manufacturers and, more important, for our customer when using our drawings in the field.

Countersink for Aircraft—

Another major NASC project was the adoption of a standard countersink for aircraft. For many years an 82 deg and a 100 deg countersink or dimple was used. Now the standard countersink is a 100 deg and is used widely, contributing large savings due to decreased stocking of head types in fasteners and tooling. In this project considerable stress analysis was necessary to prove the structural adequacy of a 100 deg countersink over an 82 deg countersink.

Universal Head Rivet—

The U.S. Navy Bureau of Aeronautics and the U.S. Air Force assisted by the NASC developed a universal head rivet for non-flush riveting. There were, for many years, three rivet head types—the brazier head, the flat head, and the round head.

The design value of each rivet was argued pro and con by stress analysts, weights engineers, standards engineers, and others. Finally, after much coordination, a universal head rivet was developed for use, replacing the round head and brazier head. This universal head is now the common denominator for non-flush head types. In fact, at Piasecki Helicopter Corporation it is the only rivet head type used on non-flush riveting. This simple standardization in rivet heads has saved the Bureau of Aeronautics Aviation Supply Office in Philadelphia an estimated $60,000 annually since its inception. It is conservative to say that the aircraft industry has saved additional $400,000 annually through the adoption of the universal head rivet.

Helicopter Standards—

A recent subcommittee of the NASC was formed for helicopter standards. This subcommittee consists of helicopter manufacturers who are also represented in NASC. Basically, helicopters and fixed-wing aircraft are the same for standardization purposes. However, some peculiar attributes of helicopters, such as power transmissions, rotor assemblies, rotor blades (the wings) are outside the normal airframe engineering and manufacturing experience. To permit standardization in the helicopter field on those items outside the scope of all fixed-wing aircraft manufacturers, the Helicopter Standards Committee was formed. Some of its current projects are:

(*a*) Bearing retaining nuts and lock washers for bearings from $1^1/_4$ in. to 39 in. in diameter.

(*b*) Flexible couplings for transmission drive shafts.

(*c*) Standard studding methods for helicopter transmissions.

Standards within the Piasecki Company are created to provide for:

1. Multiple use of the same or similar parts or both on one or several models.
2. Reduce duplication of much routine detail information on several drawings.
3. Design information for use of customer standards and commercial parts.

These Piasecki Helicopter Standards may show any one or a combination of the following:

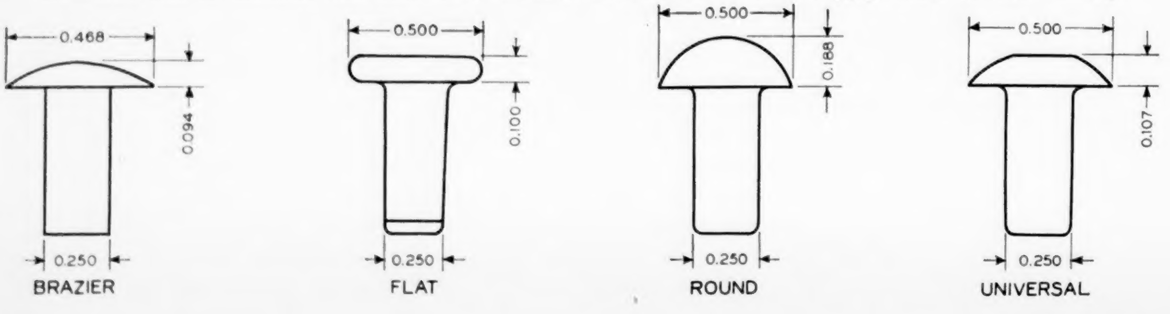
1. Parts or details or both parts and details of their installation.
2. Details of installation or design.
3. Shapes and sections from which parts can be made.
4. Interchangeability of commercial parts and materials.

An example of one of our company standards is an ejector blade that is used to pop-out quick release fastener studs from curved panels or covers. This permits easy removal of the cover after release of the fastener stud. We were using five different types and designs of ejector blades, average cost was about 8 cents each. Standardization resulted in one design with a cost saving for all current models of about $3,600. In addition, the standard is more serviceable and of better quality. Standardization was accomplished without sacrifice of weight. Reduction in width, length, and thickness of material used resulted in material conservation.

Another example is standardization of a pedal release pin. Four of these pins are used on each helicopter. Standardization, which permitted procurement in lot quantities instead of small "per model" quantities, resulted in cost savings of $1,400 on all current models. Larger quantities procured as a result of standardization naturally accounted for the cost saving.

Often in our standardization the question "why don't you use existing

Standardization on Universal rivet head saves Bureau of Aeronautics' Aviation Supply Office $60,000 annually.



commercial standards?" is asked. The answer is, we try and in a lot of cases do, but sometimes the commercial standard dictated by a less critical usage falls short of the requirements necessary for dependable aircraft. Previously, I mentioned bearing retaining nuts as a standardization project of the NASC. Let me tell you what has happened at our company as a result of use of the commercial SAE nut and you will understand better why we must develop another standard.

Commercial SAE nuts can be made from any of five groups of steel. No standard control is available on hardness, finish, magnetic indications, etc. So, we must take a commercial nut "as is." Before we use these nuts in a critical application we must magnetically inspect them, and determine their strength by the Rockwell method. If we did not, then when you fly in aircraft the chances of your completing your trip would be against you. We are buying commercial nuts and inspecting them for standards. Out of each lot we receive, about 20 percent are safe enough to use, the other 80 percent are scrapped, inasmuch as we bought to commercial standards and have no recourse. It is easy to see why it is necessary in some cases to establish more rigid standards for aircraft.

However, on the other hand, we do use commercial standards sometimes before they are generally adopted by any other industry. American Standard B32.1 on Sheet Metal Thicknesses has received aircraft industry support through the NASC, and the aeronautical branches of the government have issued a military document matching ASA B32.1. At Piasecki Helicopter Corporation we have completed the first year's operation under ASA B32.1 and here is what happened to accomplish estimated $15,000 saving:

1. Sheet sizes in stock reduced from 65 to 28.
2. Record keeping simplified.
3. Stress analysis simplified.
4. Drafting practice simplified.

Standardization is one important answer to the increasing complexity and multiplicity of today's technical developments in the aircraft industry. Some aspects of these complications are so great as to almost overwhelm use, or at best to serve as a serious drag on our industrial efficiency, unless brought under control by organization and systematization of details. Designers dealing with new problems sometimes forget the seriousness of the trail left behind them which must be dealt with by manufacturing, stores, and maintenance.

Standardization must be a progressive, dynamic process. The fact that a standard is a flexible and living creation that may be changed in a year to incorporate features making it a better standard does not affect its value as a standard. The standard controls, for a period of time, the design of a product as does a jig or fixture, which is likewise subject to change as needed.

Teamwork has been the byword in the development and use of aeronautical standards to further our defense efforts. The aircraft industry and the government have displayed fine teamwork in the past—Government in sponsorship and stimulation in the development of standards, and Industry with its technical knowledge to complete the job. If the same teamwork and cooperation could be obtained from the design engineers and consistent support from engineering management, much could be done to improve the aircraft standards and specifications. If the great gains that have been made are to be retained and improved, designers must give more time to standardization activities. Standardization is like research—we cannot afford to be without it.

PETROLEUM MEASUREMENT TABLES AVAILABLE

Of world-wide interest and significance is publication of the ASTM-IP Petroleum Measurement Tables. This material was prepared jointly by the American Society for Testing Materials and the Institute of Petroleum, Great Britain. It consists of a comprehensive group of tables, standardized on an international basis for the calculation of the quantities of crude petroleum and petroleum products in any of the three widely used systems of measurement. Three separate editions: "The American," "British," and "Metric" are now available. Begun in 1946, the tables are the result of many years of intensive cooperative work by ASTM and IP.

They were developed to meet the needs of all concerned with purchase, sale, consumption, and handling of petroleum and petroleum products. An important factor in their development was appreciation of the extent to which oil is shipped from country to country and recognition of the importance of using internationally recognized conversion factors to eliminate a possible source of disagreement in volume or weight or both as determined by shipper and receiver.

The 39 tables include data for all conversions given in the 6 tables of National Bureau of Standards *Circular C 410* and cover additional useful ranges of temperature and gravity. Furthermore, many additional tables are provided to facilitate weight and volume conversions where more than one system of measurement is involved.

Tables are provided over normal operating ranges for the reduction of gravity and volume to standard temperature, for calculation of weight-volume relationship, and interconversion of a wide variety of commercially useful units. These tables are expected to apply to crude petroleum regardless of source and to all finished petroleum products derived therefrom regardless of method of manufacture.

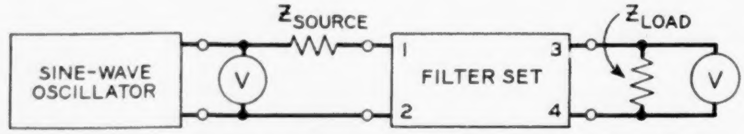
The American Society for Testing Materials has published all tables applicable to the units of measurement used in the United States, while the Institute of Petroleum, Great Britain, has published those applicable to units employed in the British Commonwealth. In addition, the IP has published a volume in metric units.

(*Continued on page* 127)

The Analysis of Noise

New American Standard Specifications for Octave-Band Filter Sets help control efficiency of equipment for analyzing noise

by Arnold Peterson

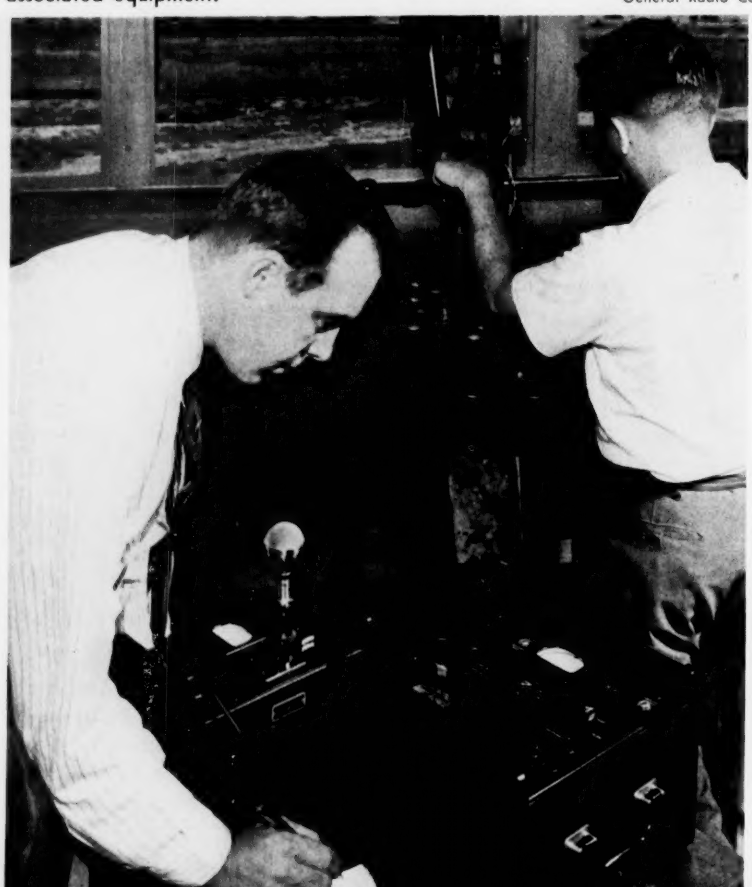


Schematic arrangement for testing filter set to determine filter-insertion loss—From American Standard Z24.10-1953

SOME of industry's more serious problems are concerned with noise. Economically and socially, the most important of these is the deafness resulting from exposure of personnel to excessively high noise levels. Also important are such problems as a noisy product that meets sales resistance, unsatisfactory speech communication near a noisy machine, and community annoyance in the vicinity of a noisy factory.

The first step in the engineering approach to handling such noise problems is measurement of the noise. The measurement obtained by using a sound-level meter that meets American Standard Z24.3-1944 is usually inadequate; it has been found that a frequency analysis of the noise is necessary to an economical solution to the problem. In the interest of promoting uniformity in this analysis a new American Standard Specification for an Octave-Band Filter Set for the Analysis of Noise and Other Sounds, Z24.10-1953 has been prepared.

The analysis of industrial noise makes use of octave band filter set (right) and associated equipment. General Radio Co



To illustrate how this standard will function to aid the engineer faced with a noise problem, let us consider the deafness risk question. Work done so far by a large number of investigators shows that the over-all noise level is not an adequate measure of its damaging effects. If a noise is principally a low-frequency one, such as that produced by low-speed motors, power transformers, and reciprocating engines, high levels can be tolerated. If, however, the noise has much energy at high frequencies, the tolerable levels are significantly lower. Because of this effect, a number of progressive companies are handling the problem in the following way: Before employment and periodically thereafter, audiograms are taken of personnel exposed to these high levels. The noise environment is also measured. This measurement is made by using a sound-level meter and an octave-band analyzer. This analyzer divides the audible noise spectrum into eight bands, ranging from a low-frequency band to a high-frequency one. This noise analysis is then compared with tentative criteria that a number of investigators have proposed[1] and which are based on an octave-band analysis. If this comparison shows

[1] A subcommittee of ASA committee Z24 is analyzing the presently available information to derive criteria for the deafness risk.

Arnold Peterson is an engineer with the General Radio Company, Cambridge, Mass. He was chairman of the subcommittee that developed the American Standard Specifications for an Octave-Band Filter Set for the Analysis of Noise and Other Sounds, Z24.10-1953. This subcommittee was organized under Sectional Committee Z24 on Acoustical Measurements and Terminology, sponsored by the Acoustical Society of America under the procedure of the American Standards Association.

the need for a reduction of the noise level, for example, because the levels in the upper bands appear too high, some remedial measures are taken. These control measures may be one of the following: Ear plugs may be worn by the exposed workers; a different and quieter production process may be substituted; or changes in the noisy machine may be made to reduce the noise level. Then the periodic audiograms will show whether or not adequate control exists.

This procedure shows the usefulness of an analysis in that only necessary measures of control need be taken; unnecessary measures due to lack of knowledge of the noise spectrum can be eliminated. Furthermore, the extent of control required is judged on a background of experience, and, therefore, standardized instruments and methods of measurement are essential. The background of experience of one organization is not sufficient to establish adequate criteria for deafness risk, because of the wide variability of the noise spectrum, of the time-exposure pattern, and of the relative susceptibility of different individuals. This situation shows the importance of industry-wide use of standardized measuring equipment. This standardization will help the individual organization in making satisfactory use of tentative criteria; it will also help to test these criteria on the basis of experience so that more nearly complete criteria will soon be available.

In addition to the problem of deafness risk, there is the important effect of interference of noise with speech. When noise levels are sufficiently high, speech communication may be impossible. As a result, shouted danger warnings may not be

(*Continued, column* 3, *page* 110)

RESEARCH STARTS ON INDUSTRIAL NOISE

CLAIMS totaling $2 billion for deafness due to excessive industrial noise are in the courts today. Noise levels in cities and industrial areas are going up to a degree which may endanger the mental and physical well-being of individuals in the vicinity. Noisy machines in factories are creating accidents resulting from warnings and instructions misunderstood or not heard. And sales resistance to noisy industrial equipment is developing.

Current pressure from legislative bodies of the states and industry for standard criteria to assist in remedying these conditions has led to the initiation of a research program, in the field of noise measurement and control by a subcommittee of ASA Sectional Committee Z24 on Acoustical Measurements and Terminology. The committee is sponsored by the Acoustical Society of America under the procedure of the American Standards Association.

The claims for compensation for loss of hearing due to industrial noise cannot be settled without adequate bases for determination of causes. Industrial noise limits cannot be set without a sufficient body of bio- and pyscho-acoustic data. Noise abatement programs are ineffectual without sufficient scientific information regarding cause and effect. These data are not yet available.

Objective of the new research program will be to explore whether criteria for noise control can be established in the light of presently available bio- and pyscho-acoustic data, and to publish such criteria for the use of those interested in industrial noise limits.

In the furtherance of these objectives, the committee will study the reliability and statistical significance of various sets of industrial data and data existing in governmental and university laboratories. It will review the methods of measurement by means of which these have been obtained and endeavor to establish recommended noise limits for applying to specific locations and conditions.

Walter A. Rosenblith, associate professor of communications biophysics of the Massachusetts Institute of Technology, has been appointed chairman of the ASA subcommittee to undertake the investigations. H. Wayne Rudmose, professor of physics at Southern Methodist University, will act as technical counsel for the group and will be the main investigator. Professor Rudmose has done extensive research in hearing and architectural acoustics, has been a consultant in the fields of architectural acoustics, noise, and vibration control, and is the author of numerous articles and reports in the areas of acoustics and psycho-acoustics. He established and developed the Acoustics Laboratory at Southern Methodist.

Professor Rosenblith is on the staff of the Research Laboratory of Electronics, and of the Acoustics Laboratory of MIT. He has been associate editor of the *Journal of the Acoustical Society* in speech and hearing. He is a consultant with the Acoustical Consulting Firm of Bolt, Beranek, and Newman. During the summer of 1952 he was head of the Noise Survey Team of the U. S. Navy (Bureau of Medicine and Surgery and the Office of Naval Research). Both Professor Rudmose and Professor Rosenblith are Fellows of the Acoustical Society of America.

The primary purpose of the research will be to assist governmental, industrial, and medical groups and groups in allied fields in setting up safe limits of industrial noise, in a manner to protect hearing. Avoidance of medical and legal complications associated with noise hazards of modern industrial and military equipment and establishments will also be one of the desired results.

The findings of the subcommittee will be published in the form of a Proposed American Standard, which will be given wide circulation for the purpose of receiving criticism. The

(*Continued, column* 1, *page* 110)

(Continued from page 109)

approved American Standard on this subject will not be published until a consensus of all those concerned is definitely established.

The ASA Committee on Acoustical Measurements and Terminology, Z24, of which the subcommittee to undertake these investigations is a part, has been working for many years on problems of noise measurement. In 1936 it developed standards for sound level meters for the measurements of noise and other sounds, as well as a standard on noise measurement. These standards have been revised, and related ones have been prepared since then. In their present form, these standards are:

American Standard Noise Measurement, Z24.2-1942
American Standard Sound Level Meters for Measurement of Noise and Other Sounds, Z24.3-1944
American Standard Test Code for Apparatus Noise Measurement, Z24.7-1950
American Standard Specification for Audiometers for General Diagnostic Purposes, Z24.5-1951
American Standard Specification for an Octave-Band Filter Set for the Analysis of Noise and Other Sounds, Z24.10-1953.
American Standard Specification for Pure-Tone Audiometers for Screening Purposes, Z24.12-1952

Although these and other standards prepared by individual groups exist, a coordinated program on a national level must be firmly based on data such as this research program is expected to develop.

Membership of the committee consists of a broad cross section of competent people who have worked in the area for many years. They represent engineering, medical, and industrial hygiene fields and academic groups. Although employed by particular organizations, the members of the subcommittee have cross affiliations covering the groups below:

Acoustical Materials Association
Acoustical Society of America
Aircraft Industries Association; Noise Committee; Noise and Vibration Subcommittee
Aircraft Manufacturers Safety Council
Air Materiel Command; Industrial Medicine Section, Office of the Air Surgeon; Air Installations Section, Industrial Relations Section, Procurement Division
American Academy of Opthalmology and Otolaryngology; Committee on Conservation of Hearing; Subcommittee on Noise in Industry
American Academy of Occupational Medicine
American Hearing Society
American Industrial Hygiene Association; Committee on Noise
American Medical Association; Committee on Audiometers and Hearing Aids; Council on Physical Medicine and Rehabilitation
American Physiological Society
American Society of Heating and Ventilating Engineers, Noise and Vibration Control Committee
American Speech and Hearing Association
American Trucking Association, Equipment Advisory Group
Associated Industries of New York, Technical Committee on Noise
Childrens Hospital of Los Angeles
Civil Aeronautic Authority
Community Builders Council of the Urban Land Institute
Department of the Army, Research in Hearing
Federal Security Agency, Office of Vocational Rehabilitation
Greater Chicago Noise Reduction Council
Illinois State Department of Labor, Committee on Noise Instrumentation; Subcommittee on Noise Effects
Industrial Hygiene Foundation of America, Medical Committee; Temporary Engineering Committee on Noise
Industrial Medical Association
Institute of Radio Engineers, Committee on Electro-Acoustics
Joint Armed Forces-National Research Council Committee on Hearing and Bio-Acoustics
National Advisory Committee on Aeronautics, Special Subcommittee on Aircraft Noise
National Association of Mutual Casualty Companies
National Institute of Health, Sensory Diseases Study Section
National Noise Abatement Council
New York State Study Commission for Medical Aspects of Industrial Hearing Loss
New York State Medical Society, Study Committee on the Deaf and Hard of Hearing
Office of Naval Research, Panel on Physiological Psychology
Otological Society
Pacific Coast Society of Ophthalmology and Otolaryngology
Walter Reed Army Hospital, Audiology and Speech Correction Center
Research and Development Board, Subpanel on Acoustic Noise Reduction; Subpanel on Vibration
U. S. Public Health Service
University of Maryland Graduate School
University of Southern California School of Medicine, Department of Otolaryngology
Veterans Administration
Washington Audio Society
George Washington University, School of Medicine
Wright Air Development Center, Equipment Laboratory; Bio-Acoustic Section, Aero Medical Laboratory

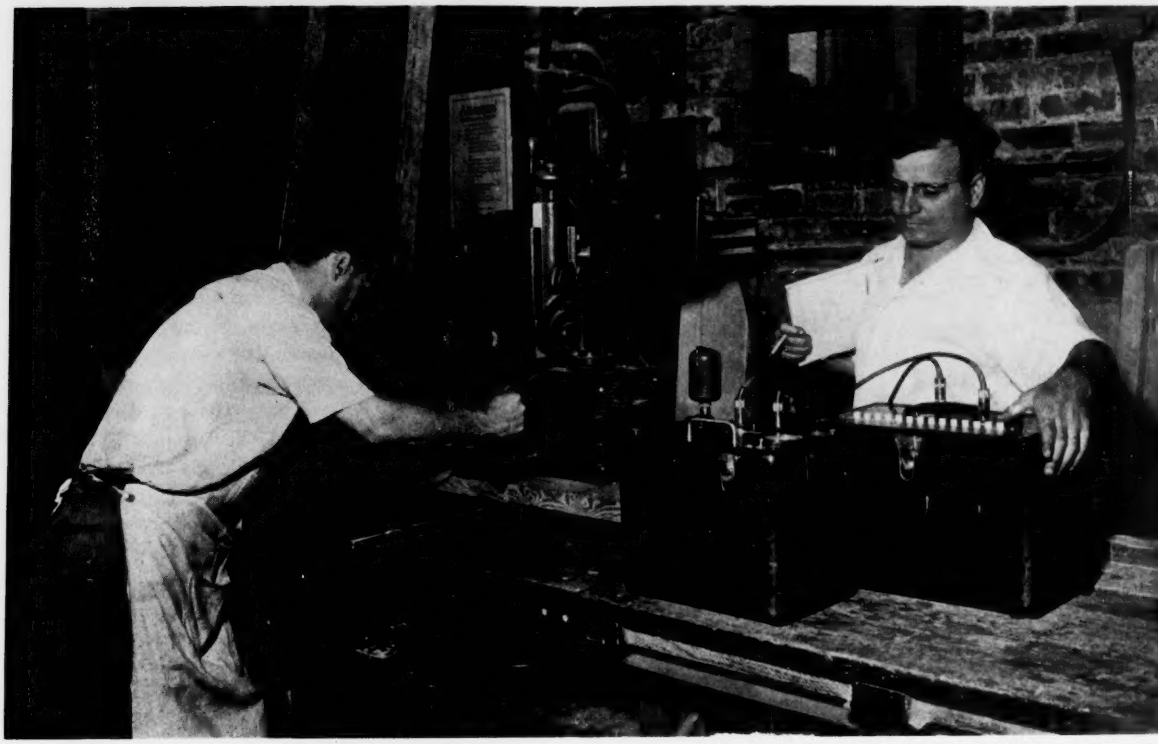
(Continued from page 109)

heard. Or, at even more moderate noise levels, it may be impossible to give instructions to the operator at a noisy machine. This interference with speech cannot be judged reliably on the basis of a single over-all measurement obtained on a sound-level meter, because the extent of the interference depends mainly on the intensity of the middle and higher frequency regions of the audible noise spectrum.

Methods of rating this interference with speech on the basis of a frequency analysis of the noise have been devised. One simple method that is generally satisfactory rates the noise on the basis of the levels in three octave bands, namely, the bands covering the ranges 600-1200, 1200-2400, and 2400-4800 cycles per second. The use of a filter set meeting the new standard will make possible such a measure of the interference of noise with speech. Then, the noise reduction needed to shift to a lower level of difficulty of speech communication can be estimated on the basis of presently available criteria.

Although frequency analysis into octave bands is useful for many applications, there are still many other noise measurements where a different analysis is desirable. For example, the noise produced by 60-cycle power transformers consists generally of components of 120 cycle, 240 cycle, 360 cycle, etc. A noise of this character is analyzed by using an analyzer having bands narrower than an octave so that the discrete components can be measured. Other noise problems may also require a different division of the spectrum, and work is being done on standardization of other types of analyzers.

This new American Standard Specification for an Octave-Band Filter Set for the Analysis of Noise and Other Sounds, Z24.10-1953, specifies the electrical performance of an octave-band filter set for use with a sound-level meter. A general discussion of the problems of frequency analysis, the selection of the frequency bands, the requirements on electrical performance, and a bibliography are included.



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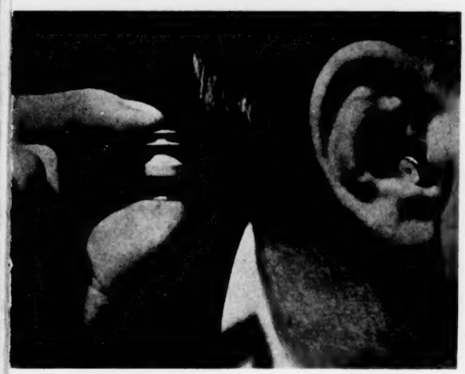
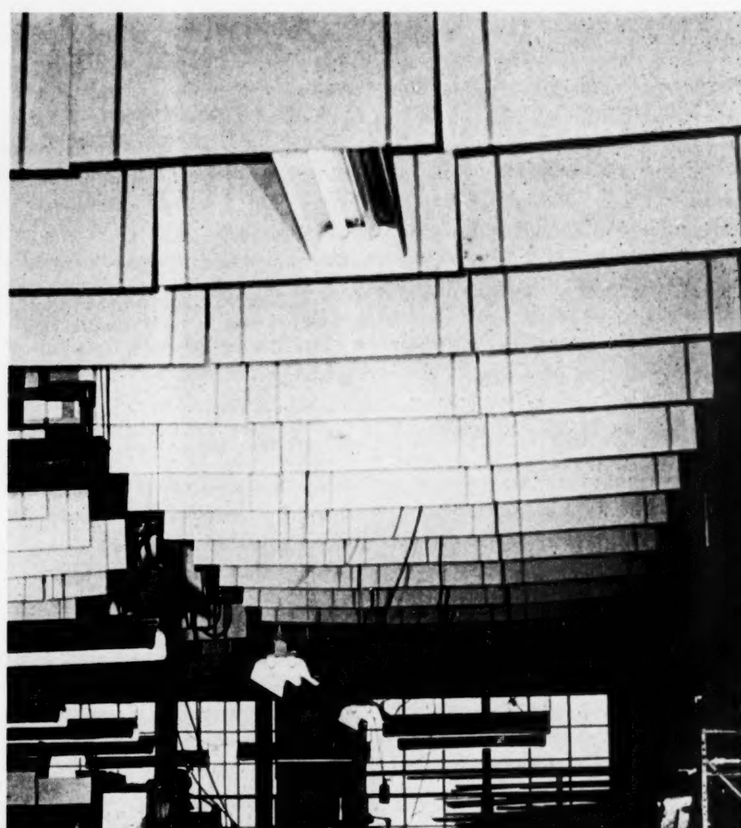
Basic instrument for noise measurement is the sound level meter. For best results meter is used with analyzing equipment. Here, sound level meter (left) and associated octave analyzer (right) are being used to analyze noise of sawing.





Two methods of protection against industrial noise—

(Above) ear protector filters out loud noises.

(Right) Acoustical baffles can be used to reduce intensity of noise in plants where ceiling obstructions interfere with installation of ordinary types of acoustical ceilings.

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A Standard for Color Densitometry

by J. P. Weiss

Committee on Photography blazes trail by agreeing on scientific basis for checking strength of color image

"YOU can't unscramble an egg!" This was the philosophy with which the American Standards Association Committee on Photographic Sensitometry approached the problem of densitometry of color film. All too often, attempts to establish standards in a field come only after the welter of confusion among existing practices has become so intolerable that something *must* be done. In such cases, the evolution of a standard may call for much cracking of skulls to effect a compromise between firmly entrenched, opposing practices. Existing equipment may even become outmoded. In this particular case, however, an attempt was made to anticipate the need for a standard in a field that was still in its formative stage, relatively speaking.

Desirability of a standard for color densitometry was first felt by a company which wished to manufacture a densitometer, an instrument to be used for such purposes as checking and controlling the photographic density (the strength of the color image) of color film. This being a pioneer instrument, they wished to be sure that their device would not soon be left stranded by rapidly changing practices. Accordingly, they suggested to the ASA Sectional Committee on Photography (then Z38) that certain basic approaches to the densitometry of color films be guided via an American Standard. Recognizing that conditions were changing and that there were an unusual number of practices to choose from in this field, Committee Z38 considered color densitometry an appropriate subject for standardization. The committee found that when almost all monopack color film was processed by the film manufacturer himself, there was little need for transmitting or comparing information on density. However, more and more color film is now being processed by others. As a result, transmittal of sensitometric information has become vital to achievement of best quality. Accordingly, Committee Z38 acted on the suggestion for development of a standard and a subgroup was set to work to develop a scientific basis for a common "language."

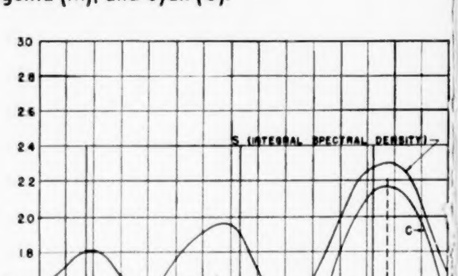
The task of the color densitometry subcommittee was aided immensely by the existing American Standard for Diffuse Transmission Density, Z38.2.5-1946. Though it applies primarily to processed black-and-white film, this standard was wisely prepared in broadest terms to establish basic definitions, and to provide a framework which would tie together all types of density measurement.

The chief problem facing the new group, therefore, was to specify spectral conditions suitable for determining the sensitometric characteristics of three-component subtractive films for color photography. This applies to any three-color positive transparency, including 35-mm slides, the larger roll film sizes, and sheet film used by commercial photographers. It was already fairly general practice to give the sensitometric description of images of such color film in terms of densities measured in three different spectral regions. If three very narrow bands of radiant energy are used, each located at the wavelength of maximum absorption of one of the film components, the data show with maximum sensitivity small variations of any one of the three components.

So far so good; no disagreement yet. The rub comes from the fact that different types of three-component monopack films use different dye components with somewhat different spectral-density distributions; there is, therefore, no unique set of wavelengths that is optimal for measurement of all such films. However, it was the consensus of the group that the use of three, and only three, wavelengths for this type of measurement has the advantage that it produces uniform results among instruments of different manufacture and permits

Mr Weiss is with the Photo Products Department, E. I. du Pont de Nemours & Company, Parlin, N. J. He was chairman of the ASA Subcommittee on Color Sensitometry that was directly responsible for development of the American Standard Spectral Diffuse Densities of Three-Component Subtractive Color Films, PH2.1-1952.

Figure 1 of American Standard PH2.1-1952—Spectral Density versus Wavelength Relationships for a Typical Three-Component Monopack Film. Curves represent the integral spectral density of the film—yellow (Y); magenta (M); and cyan (C).



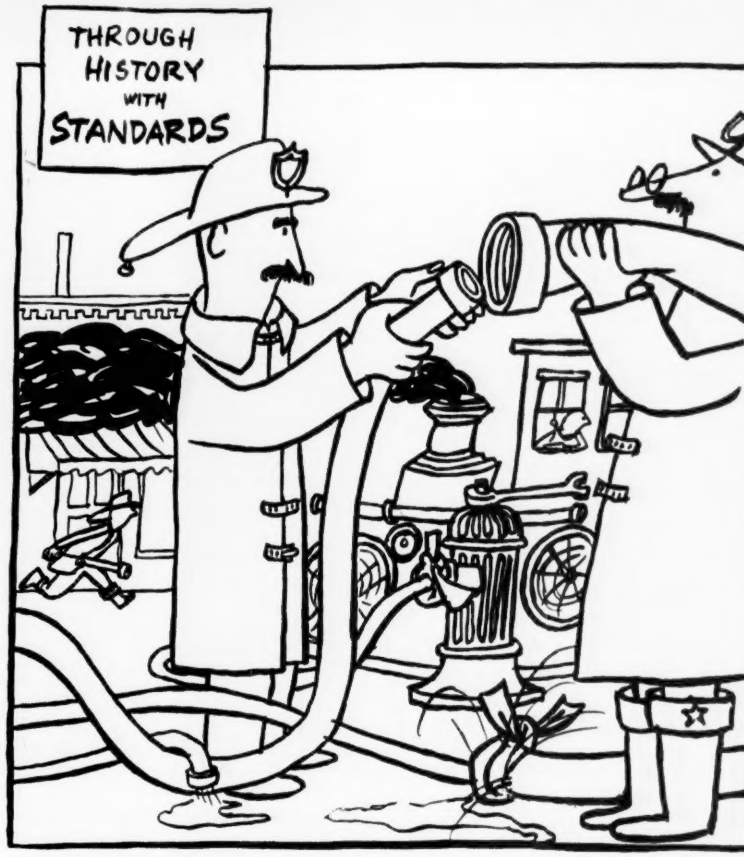
specification of a useful standard of performance. These advantages in general far outweigh the disadvantages of not measuring at exactly the optimal wavelength for any particular product. Reaching this conclusion and agreeing on the three wavelengths was the hardest job of the subcommittee.

The three wavelengths chosen are 435.8 millimicrons, 546.1 millimicrons, and 643.8 millimicrons. These should be satisfactory for all types of film now in use. The chief merit of these wavelengths is that they are emitted by mercury (435.8, 546.1) and cadmium (643.8) arc lamps, hence the specification is independent of wavelength units and calibration errors.

Recognizing that it is not always convenient or necessary to use emission lines from arc lamps for practical densitometry, provision was made for the use of broader spectral bands in practical instruments. These are satisfactory so long as they give results which, for the intended application, do not differ significantly from those obtained with the standard wavelengths.

A proposed standard was submitted for approval at just about the time ASA Committee Z38 was disbanded and four new committees appointed to take its place. It was one of the first items of business for the newly formed ASA Committee on Photographic Sensitometry, PH2. When approved as American Standard, Spectral Diffuse Densities of Three-Component Subtractive Color Films, PH2.1-1952, had the distinction of being the first standard issued as a result of the work of the new PH2 Committee.

This standard makes no attempt to describe all types of density measurement useful in color photography, nor does it concern computations to be made from the density data. What it does do is provide the basis for a common "language" when transmitting or comparing such information. Without the new standard, one man's data might be meaningless or even misleading to someone else; with its use, density measurements mean the same to everyone. •



Lack of interchangeable fire-fighting equipment cost citizens of Baltimore millions of dollars when their city burned in 1904. A fire broke out on Sunday, February 7, and when it got beyond control the local fire department called on Washington, New York, and Philadelphia for help. Special trains rushed apparatus from these three cities on cleared tracks. Then the equipment stood idly by while 150 acres of the old business section was destroyed. Their hose couplings would not fit the Baltimore hydrants.

Twenty-three years later, in 1927, fire-fighting equipment from 20 neighboring towns helped save Fall River, Mass. from total destruction in another great fire. The difference was in standardization. All equipment from the 20 communities worked interchangeably. The hydrant and hose connections had been standardized.

In the intervening years the early work of the National Fire Protection Association in this field had been developed into an American Standard for this fire-fighting equipment under the leadership of the National Board of Fire Underwriters, the American Water Works Association, and the American Society of Mechanical Engineers. That standard, which was reviewed and reaffirmed early in 1953, is in very wide use in the United States. The Office of Civilian Defense has recognized the importance of interchangeable fire hose couplings in case of enemy air attack and has adopted the American Standard screw thread for such emergency equipment.

Pocket Size Guide for Gas Conversion Burners

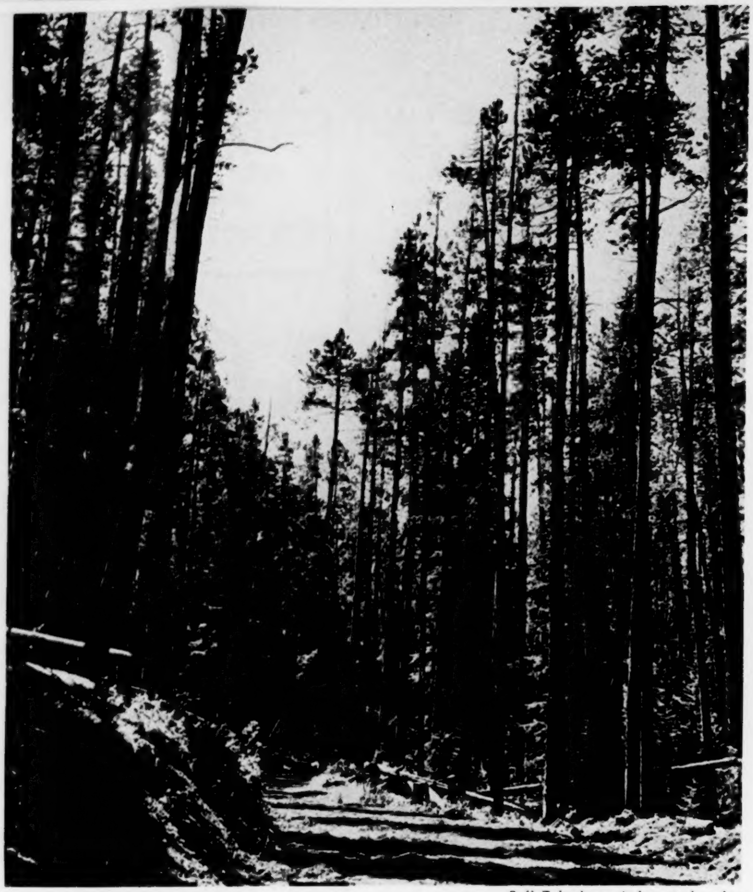
A new 40-page illustrated pocket size American Standard covering the installation of gas conversion burners in domestic ranges has just been printed. It is intended as an installation guide for gas equipment installers, and outlines the precautions that must be observed when installations are made. It also outlines test methods that must be used to assure proper operation.

This publication makes available for the first time an authoritative standard for the examination of range conversion burner installations by local authorities in the field, and for the preparation of local codes or ordinances for such installations.

Known as American Standard Requirements for Installation of Gas Conversion Burners in Domestic Ranges, copies may be obtained from the American Standards Association or from the American Gas Association Laboratories, 1032 East 62nd Street, Cleveland 3, Ohio, for $0.25.

Review of American Standard Fiber Stresses of Wood Poles

by George Q Lumsden and Reginald H. Colley



Bell Telephone Laboratories, Inc

Figure 1—A high altitude logging road in Montana passing through a forest of future lodgepole pine poles.

THE dimensions, material requirements, and fiber stresses called for in American Standard O5.1-1948 have been a controlling factor in the production and use of more than 100 million wood poles used by power and communication utilities and the railroads throughout the country. This record has been established in the 24 years since the standard was first proposed in 1929. During that time many changes have taken place in the pole producing and using industries.

Now, five years after publication of the 1948—the most recent— edition, the chairman and past chairman of Committee O5, which developed the standard, have reviewed the history and technical background of the principles on which it is based. The review, undertaken in response to inquiries, has been directed particularly to the fiber stress values used in setting up the pole size classifications given in the specifications.

Mr Lumsden, Timber Products Engineer, Bell Telephone Laboratories, Murray Hill, N. J., is chairman of ASA Sectional Committee O5 on Wood Poles; Dr Colley, Consulting Engineer, is past chairman of the committee.

Fiber stress values for wood poles were first adopted in the 1930 edition of the American Standard. At that time they covered creosoted yellow pine, butt-treated chestnut, butt-treated western red cedar, and northern white cedar. Subsequently Douglas-fir and lodgepole pine were added. These values were reaffirmed in the 1948 edition and values for several new species used during World War II were added.

A special subcommittee set up the original fiber stress figures at a meeting in the old Forest Products Laboratory at Madison, Wisconsin, June 19-20, 1929. It worked on the principle that "its task amounted essentially to reducing the data to a set of average values, and then, after consideration of the apparent variation, agreeing on certain figures preferably below the averages, which could be recommended as acceptable standard fiber strength values."

How the committee developed its values is shown in the facsimile of the figures placed on the blackboard used at the 1929 conference (Figure 2). This facsimile was copied from the blackboard by the late T. R. C. Wilson, Chief of the Division of Timber Mechanics at the Forest Products Laboratories.

The problem of agreement on fiber stresses was a major task in 1948 for the new species of wood included at that time, as it had been in 1929 in the case of the species originally included. The committee finally chose a relative strength line based upon 6600 psi fiber stress for lodgepole pine poles as its reference standard. The committee then attempted to bring the new species and the species covered by the earlier edition into approximately relative position with respect to this line. The poles are now classified in six groups as follows:

Group I: Fiber stress 3600 psi
Northern white (eastern) cedar (*Thuja occidentalis*)

Group II: Fiber stress 5600 psi
Western red cedar (*Thuja plicata*)

Group III: Fiber stress 6000 psi
Ponderosa pine (*Pinus ponderosa*)

Group IV: Fiber stress 6600 psi
Western firs (true firs)

Group IV *(Continued)*

California red fir (*Abies magnifica*)
Grand fir (*Abies grandis*)
Noble fir (*Abies nobilis*)
Pacific silver fir (*Abies amabilis*)
White fir (*Abies concolor*)

Lodgepole pine (*Pinus contorta*)
Northern pines
Jack pine (*Pinus banksiana*)
Red (Norway) pine (*Pinus resinosa*)

Group V: Fiber stress 7400 psi

Douglas fir—all types (*Pseudotsuga taxifolia*)
Western hemlock (*Tsuga heterophylla*)
Southern pines
Longleaf pine (*Pinus palustris*)
Shortleaf pine (*Pinus echinata*)
Loblolly pine (*Pinus taeda*)
Slash Pine (*Pinus caribaea*)
Slash pine (*Pinus rigida serotina*)
Pond pine (*Pinus rigida serotina*)

Group VI: Fiber stress 8400 psi

Western larch (western tamarack) (*Larix occidentalis*)

In connection with Group V, for example, the facsimile shown in Figure 2 illustrates how the value of 7400 psi was arrived at. For example, opposite the references to Creosoted Southern Yellow Pine (Creo. S. Y. Pine) the figure 8000 is entered. The figure 7320 appears under $-\frac{\sigma}{2}$ (minus the standard deviation divided by 2).

This subtraction was made in order to take into account the variation within the species group. This is a recommended practice among workers in the field of practical statistical analysis. The 7320 figure was then rounded upward to the nearest figure divisible by two hundred and the figure 7400 appears in the right-hand margin. The 125 in the circle presumably refers to the approximate number (121) of poles represented in the tests.

The subcommittee's report, approved at a meeting of Sectional Committee O5 on January 30, 1931, reviewed the fiber stress situation from June 1925 to January 1931. It showed that several fiber stresses had been suggested or recommended at various times for southern pine, based on density. For example, the following fiber stress values were proposed on the basis of density: (*a*) run of woods (6800); (*b*) dense grade (7600); and (*c*) residue from selection of dense grade (6400).

These figures were revised to read (*a*) run of woods (6300) and (*b*) dense grade (7300). The residue category was omitted in the latter grouping. Repeatedly the question of density segregation in southern pine species came up before the committee and on each occasion the idea was rejected as an impractical procedure because grading for density seemed to be an unnecessary attempt at refinement when the relatively low coefficient of variation was considered. In December, 1926, one fiber stress figure, 6800 psi, for southern pine was agreed upon.

However, at the meeting of the fiber stress committee at Madison on June 20, 1929, the 7400 psi value shown in Figure 2 was agreed upon unanimously.

In his Bell System Monograph B-615, of December 1931, Dr Colley shows that a specific routine was followed in assigning the current standard fiber stresses. In this monograph he lists the following figures for creosoted southern pine:

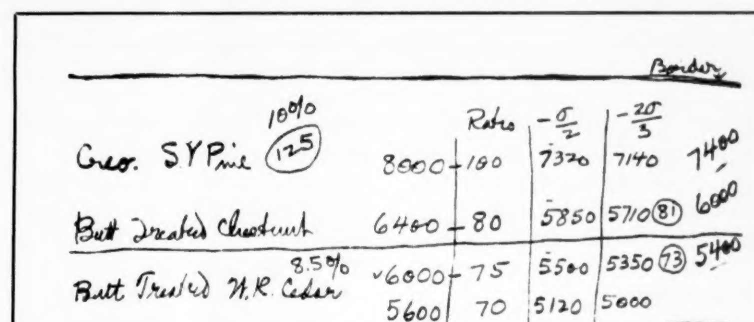
No. of poles (tested) — 121	
Modulus of rupture, psi	
Minimum	4980
Average	8026
Maximum	11050

Statistical analysis was carried out in order to estimate the variation that might be expected in the modulus of rupture. This analysis yielded the following standard deviation value:—

For creosoted southern pine 1348.

As Dr Colley explains: "After studying the data the Committee chose 7400, 6000 and 5600 pounds per square inch as the standard ultimate fiber stresses to be recommended for

Figure 2—Facsimile of figures copied by the late T. R. C. Wilson from the blackboard at conclusion of conference on wood poles June 20, 1929.



Border

	10%	Ratio	$-\frac{\sigma}{2}$	$-\frac{2\sigma}{3}$	
Creo. S.Y.Pine (125)	8000	100	7320	7140	7400
Butt Treated Chestnut	6400	80	5850	5710 (81)	6000
Butt Treated W.R. Cedar 8.5%	6000	75	5500	5350 (73)	5400
	5600	70	5120	5000	
Northern White Cedar	3600	45	3290	3210 (49)	3600

Approx. Coef of Variation 17%

8000	100	7400	100	48%
6400	80	6000	81	20%
5600	70	5600	75	12%
3600	45	3600	49	6%

→ 13.8%

Border ↗

↑ Values agreed upon

Increase above present code value of 5000

Increase above present code value of 6500 for dense S.Y.P.

Increase above present code value of 3600

Everything shown between borders is exactly as it appeared at conclusion of conference TRCW 6/25/29

Explanation added 6/25/29

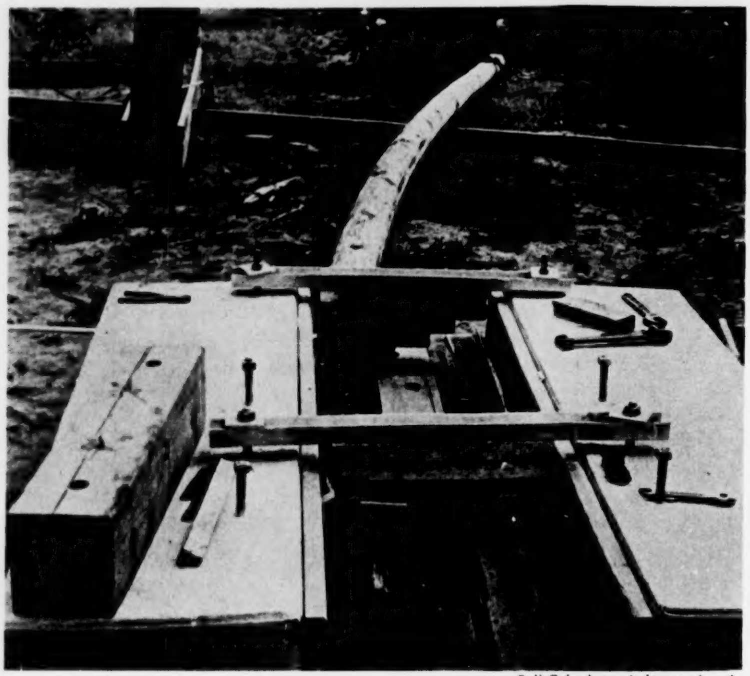


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Figure 3—Break tests on full-sized poles. Basic fiber stress data are essential so that poles of standard species can be dimensioned properly and pole lines can be designed correctly and safely.

creosoted southern pine, chestnut and western red cedar poles, respectively. Due account was taken in the course of this selection of the amount of variation within the species groups, as indicated by the standard deviations, and of the requirement that values be set so that the majority of the poles would have a fiber stress equal to or better than the chosen standards."

This means: For the 121 poles on which authentic data were available, the average modulus of rupture was 8026 psi and the standard deviation was 1348 psi. The 7400 figure was arrived at by subtracting one-half the standard deviation (674 psi) and rounding the result upward to the nearest even 200 psi figure, viz:

$$8026 - \frac{1348}{2} = 7352; \text{ call it } 7400 \text{ psi.}$$

(These figures are in approximate agreement who those in Figure 2.)

On this basis, theoretically, 69 percent of representative southern pine poles should have a modulus of rupture of 7400 psi or more.

In Dr Colley's Monograph B-615, Table 3 is entitled "Estimate of Percent of Poles Which Would Have a Modulus of Rupture so Low That the Resisting Moment at 6 Feet From the Butt Would be Below the Minimum Based on the Standard Ultimate Fiber Stresses."

Table 3 shows that for creosoted southern pine poles the following estimates were made:

	Estimated Percent of Poles With Resisting Moments Below the Minimum for the Class and Length	
	Single Poles	Groups of 3 Poles
Class 3—30 ft	14.64	3.42
Class 3—35 ft	15.56	3.97

In this case the 7400 figure is a design feature.

In the development of the dimension tables, certain loads applied at 2 feet from the top of the poles were arbitrarily assigned to each class and the resisting moments required at the ground line to support the assigned loads were calculated for each class and length. The minimum circumferences at the ground line required to realize the minimum resisting moments were then calculated on the basis of the modulus of rupture. The 7400 figure comes into the dimension tables at this point.

Figure 4—A carload of treated poies ready for shipment to a power utility. These poles conform to American Standard Specifications for Wood Poles and to American Wood-Preservers' Association Standards for Pressure Treatment.

Bell Telephone Laboratories, Inc

In order to facilitate classification and inspection, minimum circumferences at 6 feet from the butt were calculated from the minimum ground line circumferences, using average tapers for the respective species. *In this case the 7400 figure is a dimensioning feature.*

The estimates in Table 3, Monograph B-615, were well founded when it is considered that the 6-foot-from-butt circumferences within a given class will naturally range from the minimum for that class to the minimum for the next higher class. This means that only about 15 percent of the poles of average size for a given class would fail to develop the anticipated resisting moment at ground line. It is also true that if some poles do not meet the 7400 psi, the increase in dimensions over the required minimum (i.e., excess) will in many cases make up for the strength deficiency. In groups of 3 poles the estimated percent with resisting moments below the minimum would drop to 3-4 percent. All this, of course, assumes a representative sample of adequate size, and also that the poles are not mishandled in treatment or are not weakened by decay or insect attack.

Dr Colley draws the general conclusion that "practically all parts of a line constructed on the basis of the standard stresses will have, when new, a strength equal to or better than the standard rated strength of the class and length of poles used."

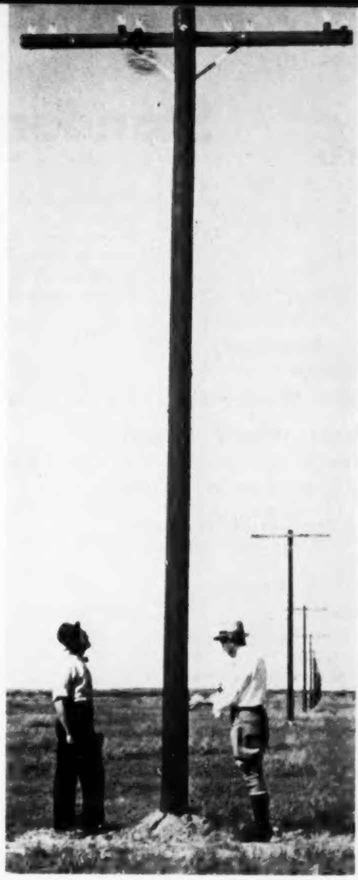
At a meeting of Committee O5 November 26, 1929, discussion[1] showed that the modulus of rupture value for any individual poles might be either above or below the average, or the recommended standard, for the species. However, it indicated that the group strength of poles in line should be taken into consideration and just how many poles entered into the group strength factor was a debatable question. An exhibit prepared to facilitate comparison of the percentages of the averages of groups of 10, 5, and 3 poles which would be expected to fall below the recommended standards was shown at this meeting.

The question of risk in the use of the standards involved not only the variation in the modulus of rupture but also the variation in the circumference of a pole of any given class. For practical purposes, therefore, it seemed wise to the Committee to make strength comparisons on the basis of moments of resistance. Assuming standard fiber strength, the moment of resistance varies directly as the cube of the circumference. The 6-foot-from-butt circumference of hundreds of pine and cedar poles had been measured and found to vary all the way from the minimum permitted for the class to a little above the minimum for the next higher class. In any given class the larger the circumference, the smaller the modulus of rupture required to make the moment of resistance of a particular pole equal to the moment of resistance calculated from the minimum permitted circumference and the recommended fiber strength.

The Committee's discussion indicated that if groups of 3 average 30 ft Class D pine poles were compared with similar groups of 30 ft Class D poles of minimum circumference it would be found that only about 6 percent of the group averages of the average poles would be expected to fall below the moment of resistance calculated from minimum circumference and the recommended standard fiber strength. Under the same conditions the figure for 30 ft Class C western red cedar would be approximately 4 percent. These expected percentages, or expected risks, were based on the average pole sizes, it was pointed out at the meeting. Individual random sample averages of groups of 3 poles, or individual pole values would be likely to fall sometimes above and sometimes below the estimates given. On the whole, however, the risks appeared to the Committee to be reasonable.

An evaluation of the work of Committee O5 is found in the records of one of the large users of wood poles. The American Standard Specifications, at that time still tentative, were discussed in detail at the annual meeting of the Telegraph and Telephone Section, American Railway Association, at Chicago, June 12-14, 1934. Reporting discussion of a paper entitled "American Tentative Standard Specifications for Wood Poles," presented by Dr Colley, the *ARA Proceedings* for 1934 comment: "Perhaps the greatest service rendered by the Committee has been the standardization of fiber stress limits. They found after careful investigation that the fiber limits we pole consumers had been using were too low in certain species. In other words, we were installing in these species poles larger than necessary for our wire loads. The fiber stress limits adopted by the Committee permit the use of poles of smaller circumferences, with resultant savings in construction costs."

(*Continued on page* 127)



Bell Telephone Laboratories, Inc

Figure 5—A telephone toll pole line employing carrier circuits crossing New Mexico. The pole in foreground has passed check inspection and the line is ready for the wire-stringers.

[1] Minutes of Sectional Committee on Wood Poles, O5, at New York, November 26, 1929.

Standards From Other Countries

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received. For the convenience of our readers, the standards are listed under their general UDC classifications.

05 Periodicals

Belgium ***NBN***

Layout of periodicals 292

362.11 Hospital. Infirmary

Poland ***PN***

13 standards for hospital linen series Z-77000

11 standards for hospital furniture and equipment series Z-78000

532.13 Viscosity

Chile ***INDITECNOR***

Determination of viscosity of liquids 2.22-1

Determination of viscosity of petroleum products 2.22-2

Conversion of conventional viscosities into kinetic units 2.22-3

542 Experimental Chemistry

Germany ***DIN***

4 standards for laboratory glassware: leveling bulb, pipettes, etc 12472; 12737/9/40

4 standards for different types of Hempel pipettes 12733/36

United Kingdom ***BS***

Dean & Stark apparatus 756:1952

614.84 Fire, Fire Brigade

Germany ***DIN***

18 standards for different types of hose couplings 14301-03; 14307-13; 14317-19; 14321-23; 14341; 14380

Firemen's ladder with hook 14710

Israel ***SI***

Foam type portable extinguishers 66

New Zealand ***NZSS***

By-law for fire prevention 673, July, 1952

Std spec for bucket-pump fire extinguishers 986, Nov, 1951

United Kingdom ***BS***

Portable fire extinguishers of the foam type (gas pressure) 740:part 2:1952

621.3 Electrical Engineering

Canada ***CSA***

Specification for concrete poles (not pre-stressed) A14.1-1953

Specification for concrete poles (pre-stressed) A14.2-1953

Construction and test of enclosed switches C22.2 No.4-1952

Czechoslovakia ***CSN***

Insulation conduits, varnished 346550

Slip-rings 350855

Electric machines for arc welding 361320

Electric pads and blankets 361430

Electric heating appliances for barber shop 361480

Connecting and branching boxes 370740

Power stations: Terminology 380110

Compensation of reactive current by static capacitors 380710

Typical steam-electric power station 381110

Rules for relay protection 384065

Pressed paper and fabric, general 644001

Pressed paper 644201/10

Pressed fabric 644301/10

Spiral tubes of pressed paper 644221

Spiral tubes of pressed fabric 644321

Square and oblong pressed paper tubes 644224

Pressed fabric rods 644324

Denmark ***DS***

Two types of laticed steel poles for overhead lines 786/7

Germany ***DIN***

Graphical symbols 40013

Electric machinery. Graphical symbols for protective devices 40050,Abl.1-4

Testing of protective devices 40060,B1.1.2

Electric machinery. Dimensions 42939,B1.1,4

Dry-type rectifiers, symbols, testing 41762;41771

Testing of insulating oil 51555

Roller-type insulators 48031

Terminal clamp bolts up to 2000 a 46206

Three-pole plugs, round prongs and safety clamp, up to 100 a, 500v 49451

Switching diagrams 49290

Safety fuses, LS type 49500

Low voltage insulating clamps 48032

Ceramic tubular core for wire resistors 41483

Rail-less electric cars; storage battery tanks 43568/72

Nickel-iron storage batteries; power and dimensions 40752,B1.2

Electric water heater 44901/2

8-prong radio tube sockets 41564

Cable drum 46391

Series clamp for switchgear 46278

Three-pole receptacle with earthing contact 49450

Foil-paper capacitors 160v to 500v 41196

Non-ferrous cast fixtures for overhead lines 43135

Clamps for round overhead conductors 43143

Rollers for switchgears 43308

Tramway controller handle 43312/3

Lead-acid batteries 43565

Hungary ***MNOSZ***

Earthing and shock-protection of power appliances 172

Power installations. General rules 1585

Insulators 1593/5

India ***I.S.***

Lead-acid storage batteries for motor vehicles 395

Electric portable immersion heaters for domestic use 368

Electric radiators for domestic use 369

Israel ***SI***

Copper conductors for insulated cables and cords 65

Electric water heaters, thermostatically controlled 66.1

Capacities and dimensions of electric water heaters thermostatically controlled 66.2

Japan ***JIS***

Capacitors, dielectric paper for C 2302

Christmas tree decorative bulbs C 7507

Flash light bulbs C 7508

Radio panel bulbs C 7509

Bicycle dynamo bulbs C 7510

Flashlight and portable lanterns C 8104

Mexico ***DGN***

Holders for screwed-and cartridge-type fuses J-20

Plugs for electric hot plates J-21

Incandescent lamps, series connected, for public illumination J-22

Junction boxes for electrical installation J-23

Netherlands ***(Draft Standards) V***

Dry batteries for hearing aids 1209

New Zealand ***NZSS***

Std spec for plugs and sockets of the flat pin type for use on 10-amp 250-volt circuits 198, Aug, 1951

Std spec for domestic electric-appliance connectors 790, Dec, 1951

Std spec for electric connector-boxes 843, May, 1951

Poland ***PN***

Three-phase oil transformers for overhead lines from 20 to 1600 kva, 50 cpm E-81100

9 standards for overhead installation material E-92305-314

Telephone jack T-82118

South Africa ***SABS***

Emergency specification for paper-insulated electric cables for general purposes 97-1951(EN)

Emergency specification for paper-insulated electric cables for heavy duty 98-1951(EN)

Emergency specification for polyvinyl chloride (P.V.C.) insulated electrical conductors 150-1951(EN)

Standard specification for miniature circuit-breakers for lighting, heating and domestic installations 155-1951

Spain ***UNE***

Wooden poles for overhead lines 21003

United Kingdom ***BS***

Electric fuses for circuits of voltage-ratings up to 660 volts 88:1952

Requirements for electrical appliances and accessories 816:1952

Dimensions of circular cone diaphragm loudspeakeres	1927:1953
Screw threads and external dimensions of lamps for endoscopes	1929:1953
Woven asbestos tape for electrical insulating purposes	1944:1953
Oil circuit-breakers for alternating current systems	116:1952
Electrode boilers	1894:1952

621.65/.69 Pumps

Germany	***DIN***
Rules for acceptance test of centrifugal pump	1944

Hungary	***MNOSZ***
Centrifugal pumps. Test and acceptance rules	269

United Kingdom	***BS***
Stirrup pumps, piston type	1901:pt.1:1952

621.753 Tolerances, Fittings, Gages

Austria	***ÖNORM***
Maximum permissible deviations of dimensions for which no tolerance is given in the drawing	M 1365

Hungary	***MNOSZ***
Tolerances and fits. General	189
15 standards for ISA tolerance and fits system	1850/54, 1856/64, 1867

Switzerland	***SNV***
Slide calipers	58040
Micrometer calipers	58050

621.798 Packing and Dispatch Equipment

France	***NF***
Bottle-and jar-caps	H 48-001

Mexico	***DGN***
Collapsible tubes of lead	B-50
Collapsible tubes of tin	B-51
Wooden packing cases	G-6

Poland	***PN***
4 standards—different packing boxes	D-79619;-622;-64, 65

Spain	***UNE***
Packing of olives	34302

Union of Soviet Socialist Republics	***GOST***
Paste-board drums for calcium hypochlorite	6147-52
Knock-down type returnable wooden boxes for packing shoes, knitted goods, etc	6215-52
Plywood drums for food products	6239-52

United Kingdom	***BS***
Temporary prevention of corrosion (Packaging Code)	1133:Section 6:1953
Paper and board wrappers, bags and containers (Packaging Code)	1133:Section 7:1952

621.82 Shafting, Couplings, etc

Germany	***DGN***
Spline shafts and hubs	54646

Japan	***JIS***
Steel balls for industrial and bicycle bearings	B 1501/2
Radial ball bearings	B 1531
Taper roller bearings	B 1534

621.88 Means of Attachment. Fastenings

Austria	***ÖNORM***
Round-head rivets for steel construction, 10 to 27mm diameter	B 4300 5th part
Bolts, countersunk head, square neck, metric	M 5025
Bolts, hexagon socket head, metric	M 5104
Lifting eye screws, metric	M 5143
Lifting eye nuts, metric	M 5222
Round head boiler rivets, 10 to 36mm diameter	M 5312
Stripper bolts	M 5424
Bolts, round, countersunk, reverse key	M 5425
Adjusting springs	M 5461/2

Czechoslovakia	***CSN***
Screw threads	1001

Denmark	***DS***
2 standards for screw thread for glass containers. Nominal dimensions and tolerances	389.1,389.2

Finland	***SFS***
Standard width across flats of screws and nuts	B.V.1
Hexagon head machine screws, Whitworth	B.V. 21
4 standards for different wood screws	B.V. 51/54
8 standards for different types of set screws, metric and Whitworth	B.V. 61/68
Hexagon nuts, rough, metric, M5 to M52	B.V. 112
Hexagon nuts, rough, Whitworth ¼ to 2 in.	B.V. 113
Hexagon nuts, finished, metric, M5 to M30	B.V. 117
Hexagon nuts, finished, Whitworth ¼ to 1¼ in.	B.V. 118
Hexagon castle nuts, metric, M4 to M52	B.V. 125
Hexagon nuts, rough, metric, M5 to M52, low type	B.V. 127
Hexagon nuts, rough, Whitworth, ¼ to 2 in., low type	B.V. 128
Hexagon nuts, finished, metric, M4 to M30, low type	B.V. 129
Hexagon nuts, finished, Whitworth, ¼ to 1¼ in., low type	B.V. 130
Round washers, rough and finished	B.V. 151/152
Straight pins	B.VI. 1
Taper pins	B.VI. 2
Split cotter pins	B.VI. 3
Adjusting collars, Whitworth set screws	B.VI. 26
Adjusting collars, metric set screws	B.VI. 27

France	***NF***
Hexagon and square nuts	E27-411/2
Woodruff keys	E 27-653

Germany	***DIN***
Hexagon head sheet metal screws	7976
Wood screws, square-head	570

Hungary	***MNOSZ***
Standard vanish thread	224
Screws; general specifications	229
Spring stop-rings for holes	231/2

Netherlands	***(Temporary) V***
Fully Whitworth threaded screws, countersunk and mushroom heads	1779, 1780, 1781
Low square nuts with Whitworth thread	1782

New Zealand	***NZSS***
Std spec for butt hinges	844, May, 1951
Std spec for strap and tee hinges	845, May, 1951

Poland	***PN***
7 standards for screws, nuts, etc	M-82051/2/3, 82215, 82217, 82219, 85082

Spain	***UNE***
Cotter pins	25045
Round-head rivets	27204, h.1

629.113 Motor Vehicles. Generalities

Austria	***ÖNORM***
General dimensions and clearances of motor vehicles	V 5000

France	***NF***
Spark plugs with thread 10, 14 and 18 mm	R 133-14
Turn direction indicator	R 143-07
Hand pumps for motorcycle tires	R 616-01

Japan	***JIS***
Pistons	D 9001
Piston pins	D 9002
Piston rings	D 9003
Cylinder linings	D 9004
Intake and exhaust valves	D 9005
Valve springs	D 9006
Crankshaft bearing	D 9007
Connecting rods	D 9008
Hub bolts and nuts	D 9009
Suspension springs	D 9010
Brake lining and clutch facing	D 9011

Spain	***UNE***
Spring leaves cross sections	26063
Ball studs and tie-rod sockets	26064/67
Sheet metal and screw caps	26068/70
Distributor, 20mm type	10034
Ignition coil, method of mounting	10035
Ignition coil, testing	10037

629.13 Aircraft Engineering

Netherlands	***(Temporary) V***
Undercoating and lacquers for aluminum, aluminum alloys and fabrics	1095

Poland	***PN***
16 standards for definition of hand of propellers, propeller mountings, straight and involute serrations, etc	L-02008; 36006/7/8/9;-36100/2/3/4/5; 76101/2/3/4/5;-85005; 86000

Spain	***UNE***
Classification of principal types airships and airplanes	28001

631 Agriculture in General

Finland	***SFS***
Blower pipe for agricultural machines	N.I. 35

France	***NF***
Lime for sulfating soil	U 43-001

Germany	***DIN***
Hoe	11614
Equipment for agricultural carts	11745

Hungary	***MNOSZ***
21 standards for different	

types of chains used for agricultral equipment and implements 572-592
13 standards for different agricultural hand tools 594, 600, 640/1, 658/9, 667/8, 673/4, 677/8
Agricultural tractors. Acceptance specification 1405
Threshing machine. Acceptance specification 1406
Harrows 1442
Winnowing machines. Acceptance specification 1449

Poland ***PN***
25 standards for different parts of agricultural machinery R-55001/4/5;-56021/25;-41;-44;-101;-105-122;-58004/5;-08;-11;-20;-24

652.3 Typewriting

Portugal ***IGPAI***
Rules for correcting typewritten manuscripts P 12

674 Wood Industry

Belgium ***NBN***
Classification of species of resinous wood 272

Canada ***CSA***
Specification for western red cedar shingles and machined grooved shakes 0118-1953
Specification for glued-laminated timber construction 0122-1953

Germany ***DIN***
Bending test 52186
Testing for the damages due to insects 52163, 52164

Ireland ***Irish Standards***
Coal tar creosote for the preservation of timber 43:1952

Italy ***UNI***
11 standards for testing wood. Preparation of test pieces. Compression tests, bending test determination of the module of elasticity, etc 3252 thru 3262

Japan ***JIS***
Wooden boxes for export packing Z 1402

New Zealand ***NZSS***
Std spec for general purpose timber ladders 624, March, 1951

Poland ***PN***
Soft wood lumber D-94006
Hardwood lumber D-95008

United Kingdom ***BS***
Quality of timber and workmanship in joinery, Part 1: Quality of timber 1186:part 1:1952
Woodworking chisels and gouges 1943:1953

675 Leather Industry

Yugoslavia ***JUS***
4 standards for different raw hides G.B0.001:.006;.001;.016
Tanned and dressed skins. Sampling and Testing G.B0.006
9 standards for different grades of leather G.B1.051/2;.056;.066;.067;.071;.081/2;.091
4 passenger elevators BR 57 90 01
8 standards for different types of leather shoes G.B2.121-.124;.131;.136;.141/2

676 Paper Industry

Chile ***INDITECNOR***
Paper bags 2.32-1

Czechoslovakia ***CSN***
Paper in rolls for printing 50-6803

Ireland ***Irish Standards***
Wrapping paper 39:1952

New Zealand ***NZSS***
Std spec for carbon paper (Govt purchasing series) GP 8, Nov, 1951

Poland ***PN***
6 standards for different kinds of paper P-02003;-95001/2;-95012;-502;-702

Union of Soviet Socialist Republics ***GOST***
Base for carbon paper 488-52
Blotting paper 6246-52

United Kingdom ***BS***
Sizes of single-ply paper bags 1891:1952

679.5 Plastic Industry

Germany ***DIN***
Saponification number test 53404
Compression testing 53454
Tension testing 53455

Netherlands ***(Temporary) V***
Plastics, determination of the impact resistance (Izod test) 933

Sweden ***SIS***
3 standards for dial indicators SMS 1364/5/6

685 Leather Work

Mexico ***DGN***
Leather used for Army equipment I 8

Sweden ***SIS***
Skiing boots and ski fastenings. Angles SIS 90 00 10

691 Building Material

Austria ***ÖNORM***
Natural stone foundation B 3111
Sampling and testing natural stones B 3120/23

Chile ***INDITECNOR***
Solid clay bricks 2.30-55

Czechoslovakia ***CSN***
Solid bricks, burnt 1182
Hollow bricks, burnt 1183/4
Light solid bricks, burnt 1185
Solid sand-lime bricks 1272
Light molded concrete bricks 1273
Testing of building stones 1284

Germany ***DIN***
Parquet flooring boards 280
Glass plates 1249
Hollow blocks of light concrete 1851, 1852
Lime loam stones 106
Different kinds of building and roofing papers and felts 52117, 52119, 52121, 52126, 52128/9, 52140

Hungary ***MNOSZ***
Testing of concrete 934
Natural stones 1991
Aggregates for concrete 1992

Israel ***SI***
Clay hollow blocks for ribbed floors 14
Concrete hollow blocks for ribbed floors 12
Concrete paving flags 8

New Zealand ***NZSS***
Std spec for concrete bricks and blocks 595, Oct, 1952

Union of Soviet Socialist Republics ***GOST***
Hollow cement blocks. Dimension and types 6133-52
Ceramic floor tiles 6140-52

United Kingdom ***BS***
Fibre building boards 1142:1953

697 Heating and Ventilating

Finland ***SFS***
Smoke pipes for log cabins N.V. 1

New Zealand ***NZSS***
Std code of building by-laws, Part 12, Chimneys 95, Part 12, July, 1951
Std code of practice for the installation of thermal storage electric water-heaters 917, Sept, 1951
Std spec for immersion heaters for thermal storage electric water-heaters 918, Sept, 1951

United Kingdom ***BS***
Oil burning equipment 799:1953

778 Application of Photography

United Kingdom ***BS***
Projectors for film strip and miniature lantern slides (for educational use) and optical lanterns 1915:1952
Film strip and lantern slides 1917:1952

792 Theatre

Germany ***DIN***
Method of building stage platforms 56901

Conference Will Discuss Microfilms

THE need for standards to assure readability and permanence of records reproduced by photography will be the subject of a conference May 21 at American Standards Association headquarters.

Forty organizations representing users and manufacturers of microfilm and photocopy equipment have been invited. Those present will be asked to recommend whether a committee should be organized to develop standards for photographic documentation. Although microfilm records will be one of the principal subjects discussed, normal size photographic records, such as photocopies, diazo prints, and similar materials will also be considered.

ASA has received requests for a study of the problem both from the Special Libraries Association and from a manufacturer of microfilm equipment.

In addition, the International Organization for Standardization has requested American cooperation in similar work abroad. A committee of ISO has asked ASA to name representatives and to provide microfilm readers for study. Among other problems presented to ASA are standard sizes for photocopy paper, English terms to use for French and German equivalents, and how to determine whether a document will be legible when microfilmed.

At present no group in this country is sufficiently acquainted with both the library and photographic aspects to act on standards in connection with photographic documentation. The Photographic Standards Board of the American Standards Association is in charge of an active standardization program on questions involving the photographic process itself. The rapidly growing use of microfilm, not only by public libraries but also by companies, laboratories, and government organizations, is bringing more specific photographic documentation questions before the Board.

If a new committee should be organized under the procedure of the American Standards Association, it would include representatives of all groups concerned—manufacturers of equipment for making microfilms and other photographic records of documents; manufacturers of processing equipment, storage equipment, and readers; as well as companies, libraries, and government departments representing users of these documents. Through the work of such a committee, the viewpoints of all would be taken into consideration and any standards developed would represent agreement on the part of all concerned.

Comments or suggestions in advance of the meeting should be sent to the Photographic Standards Board, care of the American Standards Association, 70 East 45 Street, New York 17, N. Y.

WHAT IS YOUR QUESTION?

Our company is having trouble because of lack of coordination between the specifications for shafting keys contained in American Standard B17.1-1943 and practices followed by manufacturers of the keys. Is anything being done to bring about greater coordination between the standard and the manufacturers' practice?

Inquiries received by ASA indicate that manufacturers specializing in manufacture of keys supply a plus tolerance on the width instead of a minus tolerance as recommended by the American Standard. Committee B17 is considering these problems although it has not yet undertaken a revision of American Standard B17.1-1943. At least one manufacturer has requested an opportunity to keep in closer touch with the work of the committee in order to coordinate his practices with those developed by Committee B17.

We would like to identify one of our products to indicate that it meets the requirements of an American Standard. Is this permissible, and if so can you suggest the method to follow?

This is not only permitted but is encouraged according to a policy adopted by ASA's Board of Directors. Each American Standard published by ASA states: "Producers of goods made in conformity with an American Standard are encouraged to state on their own responsibility, in advertising, promotion material, or on tags or labels, that the goods are produced in conformity with particular American Standards. The inclusion in such advertising and promotion media, or on tags or labels, of information concerning the characteristics covered by the standard to define its scope is also encouraged." The statement cautions users of American Standards to secure the latest edition, however, since American Standards are subject to revision to meet changing conditions.

Which of the American Standard Graphical Symbols should we follow when designing control apparatus using electronic devices? Our product is controlled by electronic equipment that cannot be classified as "radio parts." Should we follow "Graphical Symbols for Telephone, Telegraph, and Radio Use"?

Active work is going forward on new graphical symbols standards and on revisions of those already in existence. For this problem ASA suggested the use of American Standard Graphical Symbols for Electric Power and Control, Y32.3-1946 and Basic Graphical Symbols for Electric Apparatus, Y32.12-1947. A revised edition of the Graphical Symbols for Electron Devices is now being prepared. The 1948 edition is out of print until the new one is completed.

AMERICAN STANDARDS

Status as of April 2, 1953

Legend

Standards Council — Approval of Standards Council is final approval as American Standard; usually requires 4 weeks.

Board of Review—Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks.

Standards Boards—Approve standards to send to Standards Council or Board of Review for final action; approval by standards boards usually takes 4 weeks.

Acoustics

American Standards Published—

Octave-Band Filter Set for the Analysis of Noise and Other Sounds, Specification for, Z24.10-1953 $.50

Pure-Tone Audiometers for Screening Purposes, Specification for, Z24.12-1952 $.50

Method for Measurement of Characteristics of Hearing Aids, Z24.14-1953 $.50

Sponsor: Acoustical Society of America

Building

American Standards Published—

Building Exits Code, A9.1-1953; NFPA 101 (Revision of A9.1-1951) $1.00

Sponsor: National Fire Protection Association

Structural Clay Load-Bearing Wall Tile, Specifications for, ASTM C 34-52; ASA A74.1-1953 $.25

Concrete Building Brick, Specifications for, ASTM C 55-52; ASA A75.1-1953 $.25

Structural Clay Non-Load-Bearing Tile, Specifications for, ASTM C 56-52; ASA A76.1-1953 $.25

Structural Clay Floor Tile, Specifications for, ASTM C 57-52; ASA A77.1-1953 $.25

Solid Load-Bearing Concrete Masonry Units, Specifications for, ASTM C 145-52; ASA A81.1-1953 $.25

Methods of Sampling and Testing Structural Clay Tile, ASTM C 112-52; ASA A83.1-1953 $.25

Methods of Sampling and Testing Concrete Masonry Units, ASTM C 140-52; ASA A84.1-1953 $.25

Sponsor: American Society for Testing Materials

American Standards Approved—

Hollow Load-Bearing Concrete Masonry Units, Specifications for, ASTM C 90-52; ASA A79.1-1953 (Revision of ASTM C 90-44; ASA A79.1-1944)

Hollow Non-Load-Bearing Concrete Masonry Units, Specifications for, ASTM C 129-52; ASA A80.1-1953 (Revision of ASTM C 129-39; ASA A80.1-1942)

Gypsum Wallboard Interior Finishes, Specifications for, A97.1-1953

Sponsor: American Institute of Architects; Gypsum Association

Building Brick (Solid Masonry Units made from Clay and Shale), Specifications for, ASTM C62-50; ASA A98.1-1953

Facing Brick (Solid Masonry Units made from Clay or Shale), Specifications for, ASTM C216-50; ASA A99.1-1953

Sponsor: American Society for Testing Materials

Standards Submitted—

Building Code Requirements and Good Practice Recommendations for Masonry, A41 (Revision of A41.1-1944 NBS M174)

Sponsor: National Bureau of Standards

Non-Spark Conductive Oxychloride Composition Flooring and Its Installation, Specifications for, A88.9

Sponsors: American Society for Testing Materials; National Bureau of Standards

Electrical

American Standards Published—

Tinned Soft or Annealed Copper Wire for Electrical Purposes, Specifications for, ASTM B 33-52T; ASA C7.4-1953 $.25

Soft Rectangular and Square Bare Copper Wire for Electrical Conductors, Specifications for, ASTM B48-52; ASA C7.9-1953 $.25

Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Members, for Electrical Conductors, Tentative Specifications for, ASTM B172-52T; ASA C7.12-1953 $.25

Rope-Lay-Stranded Copper Conductors Having Concentric-Stranded Members, for Electrical Conductors, Tentative Specifications for, ASTM B 173-52T; ASA C7.13-1953 $.25

Bunch-Stranded Copper Conductors for Electrical Conductors, Tentative Specifications for, ASTM B 174-52T; ASA C7.13-1953 $.25

Sponsor: American Society for Testing Materials

Transformers, Regulators, and Reactors, Terminology for, C57.10-1953 (Revision of C57.10-1948) No charge

Transformers, Regulators, and Reactors, General Requirements for, C57.11-1953 (Revision of C57.11-1948) No charge

Instrument Transformers, Requirements for, C57.13-1953 (Revision of C57.13-1948) $1.00

Guide for Loading and Operation of Instrument Transformers, C57.33-1953 (Revision of C57.33-1948) $.35

Sponsor: Electrical Standards Board

American Standards Approved—

Soft or Annealed Copper Wire, Specifications for, ASTM B3-52T; ASA C7.1-1953 (Revision of ASTM B3-45; ASA C7.1-1947 R1951

Hard-Drawn Copper Wire, Specifications for, ASTM B1-52T; ASA C7.2-1953 (Revision of ASTM B1-49; ASA C7.2-1951)

Medium-Hard-Drawn Copper Wire, Specifications for, ASTM B2-52; ASA C7.3-1953 (Revision of ASTM B2-49; ASA C7.3-1951)

Bronze Trolley Wire, Specifications for, ASTM B9-52; ASA C7.5-1953 (Revision of ASTM B9-49; ASA C7.5-1951)

Hot-Rolled Copper Rods for Electrical Purposes, Specifications for, ASTM B49-52; ASA C7.7-1953 (Revision of ASTM B49-50; ASA C7.7-1951)

Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft, ASTM B8-52; ASA C7.8-1953 (Revision of ASTM B8-50; ASA C7.8-1951)

Hard-Drawn Copper Alloy Wires for Electrical Conductors, Specifications for, ASTM B105-52; ASA C7.10-1953 (Revision of ASTM B105-49; ASA C7.10-1951)

Rope-Lay-Stranded Members, for Electrical Haulage, Specifications for, ASTM B116-52; ASA C7.11-1953 (Revision of ASTM B116-49; ASA C7.11-1951)

Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes, Specifications for, ASTM B189-52T; ASA C7.15-1953 (Revision of ASTM B189-50; ASA C7.15-1951)

Cored, Annular, Concentric-Lay-Stranded Copper Conductors, Specifications for, ASTM B226-52; ASA C7.16-1953 (Revision of ASTM B226-50; ASA C7.16-1951)

Hard-Drawn Copper Covered Steel Wire, Specifications for, ASTM B227-52; ASA C7.17-1953 (Revision of ASTM B227-49; ASA C7.17-1951)

Concentric-Lay-Stranded Copper Covered Steel Conductors, Specifications for, ASTM B228-52; ASA C7.18-1953 (Revision of ASTM B228-49; ASA C7.18-1951)

Concentric-Lay-Stranded Copper and Copper Covered Steel Composite Conductors, Specifications for, ASTM B229-52; ASA C7.19-1953 (Revision of ASTM B229-49; ASA C7.19-1951)

Hard-Drawn Aluminum Wire for Electrical Purposes, Specifications for, ASTM B230-52T; ASA C7.20-1953 (Revision of ASTM B230-50T; ASA C7.20-1951)

Concentric-Lay-Stranded Aluminum Conductors, Hard-Drawn, Specifications for, ASTM B231-52; ASA C7.21-1953 (Revision of ASTM B231-49; ASA C7.21-1951)

Concentric-Lay-Stranded Aluminum Conductors, Steel Reinforced, Specifications for, (ACSR) ASTM B232-52T; ASA C7.22-1953 (Revision of ASTM B232-50T; ASA C7.22-1951)

Rolled Aluminum Rods (EC Grade) for

Electrical Purposes, Specifications for, ASTM B233-52; ASA C7.23-1953 (Revision of ASTM B233-49; ASA C7.23-1951)

Copper Bus Bar, Rod, and Shapes, Specifications for, C7.25-1953

Seamless Copper Bus Pipe and Tube, Specifications for, ASTM B188-52; ASA C7.26-1953

Aluminum Bars for Electrical Purposes (Bus Bars), Specifications for, ASTM B236-52T; ASA C7.27-1953

Standard Weight Zinc-Coated (Galvanized) Steel Core Wire for Aluminum Conductors, Steel Reinforced, Specifications for, ASTM B245-52T; ASA C7.28-1953
Sponsor: American Society for Testing Materials

In Electrical Standards Board—

Code for Protection Against Lightning, C5
Sponsors: National Bureau of Standards; National Fire Protection Association; American Institute of Electrical Engineers

Copper Trolley Wire, Specifications for, (Revision of ASTM B47-49; ASA C7.6-1951)
Sponsor: American Society for Testing Materials

Direct - Acting Electrical Instruments, Switchboard and Portable, C39.2
Sponsor: Electrical Standards Committee

Dimensional Characteristics of Electron Tubes (RMA ET-105-A; NEMA 502-A), ASA C60.2
Sponsor: Joint Electron Tube Engineering Council

Reaffirmation Requested—

American Standard for Automatic Station Control, Supervisory and Telemetering Equipments, C37.2-1945

Incandescent Lamps
for General Service, C78.101-1949
for Train, Locomotive, and Country Home Service, C78.102-1949
for Street Railway Service, C78-103-1949
for Spotlight and Floodlight Service, C78.105-1949
for Street Series Service, C78.109-1949

34 standards for different type bulbs with screw bases in the C78 series

Fuels

American Standards Approved—

Method of Test for Calorific Value of Gaseous Fuels by Water Flow Calorimeter, ASTM D900-48; ASA Z68.1-1953

Method of Test for Specific Gravity of Gaseous Fuels, ASTM D 1070-52; ASA Z69.1-1953
Sponsor: American Society for Testing Materials

In Miscellaneous Standards Board—

Definition of Terms, Gross Calorific Value of Net Calorific Value of Fuels, ASTM D 407-44; ASA Z67.1
Sponsor: American Society for Testing Materials

Gas Burning Appliances

American Standards Published—

Requirements for Installation of Gas Conversion Burners in Domestic Ranges, Z21.38-1953 $.25

Listing Requirements for Gas Conversion Burners for Domestic Ranges, Z21.39-1953 $2.00
Sponsor: American Gas Association

Graphic Standards

American Standard Approved—

Letter Symbols for Meteorology, Y10.10-1953
Sponsor: American Society of Mechanical Engineers

Horticulture

American Standard Published—

American Standard for Nursery Stock, Z60.1-1952 $.50
Sponsor: American Association of Nurserymen

Mechanical

American Standard Published—

Brass or Bronze Flanges and Flanged Fittings, 150 and 300 Lb, B16.24-1953 $1.00
Sponsors: Heating, Piping, and Air Conditioning Contractors National Association; Manufacturers Standardization Society of the Valve and Fittings Industry; The American Society of Mechanical Engineers

American Standards Approved—

Machine Tapers, Self-Holding and Steep Taper Series, B5.10-1953 (Revision of B5.10-1943)
Sponsors: American Society of Mechanical Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers

Plain Washers, B27.2-1953 (Revision of B27.2-1949)
Sponsors: The Society of Automotive Engineers; The American Society of Mechanical Engineers

In Board of Review—

Spindle Noses and Arbors for Milling Machines, B5.18 (Revision of B5.18-1943)

Involute Spline and Serration Gages and Gaging, B5.31
Sponsors: American Society of Mechanical Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers

Compressed Gas Cylinder Valve Outlet and Inlet Connections, B57.1 (Revision of B57.1-1950)
Sponsor: Compressed Gas Association

In Mechanical Standards Board—

Supplement No. 1 to American Standard Code for Pressure Piping, B31.1-1951, B31.1a
Sponsor: American Society of Mechanical Engineers

Metallic Materials and Metallurgy

American Standard Published—

Malleable Iron Castings, Specifications for, (ASTM A 47-52; ASME Boiler Code Specification SA-47; SAE std; AASHO M106; ASA G48.1-1953) $.25

American Standard Approved—

Recommended Practice for Thermal Analysis of Metals and Alloys, ASTM 14-51T; ASA Z30.2-1953 (Revision of ASTM E14-33; ASA Z30.2-1936)

Seamless Copper Water Tube, Specifications for, ASTM B88-51; ASA H23.1-1953 (Revision of ASTM B88-50; ASA H23.1-1949)

Copper-Silicon Alloy Wire for General Purposes, Specifications for, ASTM B99-51; ASA H30.1-1953 (Revision of ASTM B99-49; ASA H30.1-1949)
Sponsor: American Society for Testing Materials

In Miscellaneous Standards Board—

Copper and Copper Base Alloy Forging Rods, Bars and Shapes (Revision of ASTM B 124-51; ASA H7.1-1953)

Free-Cutting Brass Rod and Bar for Use in Screw Machines (Revision of ASTM B 16-51; ASA H8.1-1953)

Seamless Copper Pipe, Standard Sizes (Revision of ASTM B 42-51; ASA H26.1-1953)

Seamless Red Brass Pipe, Standard Sizes (Revision of ASTM B 43-51; ASA H27.1-1953)

Bronze Castings in the Rough for Locomotive Wearing Parts (Revision of ASTM B 66-49; ASA H28.1-1953)

Car and Tender Journal Bearings, Lined (Revision of ASTM B 67-49; ASA H29.1-1953)

Rolled Copper-Alloy Bearing and Expansion Plates and Sheets for Bridge and Other Structural Uses (Revision of ASTM B 100-49; ASA H31.1-1949)

Brass Wire (Revision of ASTM B 134-51; ASA H32.1-1953)

Leaded Red Brass (Hardware Bronze) Rods, Bars, and Shapes (Revision of ASTM B 140-51; ASA H33.1-1953)
Sponsor: American Society for Testing Materials

Cast Iron Pit Cast Pipe for Gas, Specifications for, A21.3-1953

Cast Iron Pipe Centrifugally Cast in Metal Molds for Gas, Specifications for, A21.7-1953

Cast Iron Pipe Centrifugally Cast in Sand Lined Molds for Gas, Specifications for, A21.9-1953
Sponsors: American Gas Association; American Society for Testing Materials; American Water Works Association; New England Water Works Association

Motion Pictures

American Standards Published—

Dimensions for 35mm Motion Picture Film

Alternate Standards for Either Positive or Negative Raw Stock, PH22.1-1953 $.25

Dimensions for Projection Lamps Medium Prefocus Ring Double-Contact Base-Up Type for 16mm and 8mm Motion Picture Projectors, PH22.84-1953 $.25

Dimensions for Projection Lamps Medium Prefocus Base-Down Type for 16mm and 8mm Motion Picture Projectors, PH22.85-1953 $.25

Enlargement Ratio for 16mm to 35mm Optical Printing, PH22.92-1953 $.25
Sponsor: Society of Motion Picture and Television Engineers

In Photographic Standards Board—

Screen Brightness for 35-mm Motion Pictures, PH22.39 (Revision of Z22.39-1944)

Method for Determining Resolving Power of 16-mm Motion Picture Projector Lenses, PH22.53 (Revision of Z22.53-1946)

Dimensions for 200-Mil Magnetic Sound Tracks on 35-mm and 17½-mm Motion Picture Film, PH22.86

Dimensions for 100-Mil Magnetic Coating on Single-Perforated 16-mm Motion Picture Film, PH22.87
Sponsor: Society of Motion Picture and Television Engineers

Optics

In Miscellaneous Standards Board—

Nomenclature for Radiometry and Photometry, Z58.1.1
Sponsor: Optical Society of America

Petroleum Products and Lubricants

American Standards Published—

Distillation of Gasoline, Naphtha, Kerosine, and Similar Petroleum Products, Method of Test for, ASTM D 86-52; ASA Z11.10-1952 $.25

Distillation of Crude Petroleum, Method of Test for, ASTM D 285-52; ASA Z11.32-1952 $.25

Stoddard Solvent, Specifications for, ASTM D 484-52; ASA Z11.42-1952 $.25

Oil Content of Paraffin Wax, Tentative Method for, ASTM D 721-51T; ASA Z11.52-1952 $.25

Dielectric Strength of Insulating Oil of Petroleum Origin, Method of Test for, ASTM D 877-49; ASA C59.19-1952 $.25

Acidity of Residue from Distillation of Gasoline and of Petroleum Solvents, ASTM D 1093-52; ASA Z11.77-1952 $.25
Sponsor: American Society for Testing Materials

Photography

American Standards Published—

Dimensions for Aerial Film Spools, PH1.2-1952 through PH1.9-1952 (Revision of Z38.1.32-1945 through Z38.1.40-1945) $.25 each

Dimensions for Roll Film and Unsensitized Leaders and Trailers for Aerial Photography, PH1.10-1952 (Revision of Z38.1.41-1944) $.25
Sponsor: Photographic Standards Board

In Photographic Standards Board—

Dimensions for Photographic Paper Rolls, PH1.11 (Revision of Z38.1.5-1943 and Partial Revision of Z38.1.6-1943)

Dimensions for Photographic Paper Sheets, PH1.12 (Partial Revision of Z38.1.6-1943 and Revision of Z38.1.43-1947)

Contact Printers, Specifications for, PH3.8 (Revision of Z38.7.10-1944)

Masks (Separate) for Use in Photographic Contact Printing of Roll Film Negatives, Specifications for, PH3.9 (Revision of Z38.7.12-1944)

Stereo Still Pictures on 35-Millimeter Film, PH3.11

Attachment Threads for Lens Accessories, Specifications for, PH3.12 (Revision of Z38.4.12-1944)

Photographic Grade Blotters, PH4.10

Photographic Grade Ammonium Chloride (NH_4Cl), Specification for, PH4.183

Photographic Grade Ammonium Sulfate ($(NH_4)_2SO_4$), Specification for, PH4.184
Sponsor: Photographic Standards Board

Safety

American Standards Approved—

Code for the Prevention of Dust Explosions in Flour and Feed Mills, Z12.3-1953; NFPA No. 61C (Revision of ASA Z12.3-1946)

Code for the Prevention of Dust Explosions in Terminal Grain Elevators, Z12.4-1953; NFPA No. 61B (Revision of ASA Z12.4-1950)

Code for the Prevention of Dust Explosions in Woodworking Plants, Z12.5-1953; NFPA No. 663 (Revision of ASA Z12.5-1942)

Code for Pulverizing Systems for Sugar and Cocoa, Z12.6-1953; NFPA No. 62 (Revision of ASA Z12.6-1946)

Code for the Prevention of Dust Explosions in Coal Pneumatic Cleaning Plants, Z12.7-1953; NFPA No. 653 (Revision of ASA Z12.7-1946)

Code for the Prevention of Dust Ignitions in Spice Grinding Plants, Z12.9-1953; NFPA No. 656 (Revision of ASA Z12.9-1946)

Code for the Prevention of Dust Explosions in the Manufacture of Aluminum Bronze Powder, Z12.11-1953; NFPA No. 651 (Revision of ASA Z12.11-1946)

Code for the Prevention of Dust Ignitions in Country Grain Elevators, Z12.13-1953; NFPA No. 64 (Revision of ASA Z12.13-1946)

Code for Explosion and Fire Protection in Plants Producing or Handling Magnesium Powder or Dust, Z12.15-1953; NFPA No. 652 (Revision of Z12.15-1946)

Code for the Prevention of Dust Explosions in Confectionery Plants, Z12.18-1953; NFPA No. 657
Sponsor: National Fire Protection Assn

In Safety Standards Board—

Safety Code for Mechanical Power-Transmission Apparatus, B15.1 (Revision of B15-1927)
Sponsors: Association of Casualty and Surety Companies; International Association of Governmental Labor Officials; American Society of Mechanical Engineers

Street and Highway Traffic

American Standard Approved—

Practice for Street and Highway Lighting, D12.1-1953 (Revision of D12.1-1947)
Sponsor: Illuminating Engineering Society

Textiles

American Standard Published—

Flammability of Clothing Textiles, Test Method for, ASTM D1230-52T; AATCC 33-52; ASA L14.69-1952 $.35

In Consumer Goods Standards Board—

Definitions of Terms Relating to Textile Materials (Revision of ASTM D 123-50; ASA L14.12-1951)

Methods of Testing and Tolerances for Cotton Yarns (Revision of ASTM D 180-52T; ASA L14.13)

Method of Test for Asbestos Yarns (Revision of ASTM D 299-52T; ASA L14.18)

Methods of Testing and Tolerances for Certain Wool and Part Wool Fabric (Revision of ASTM D 462-52; ASA L14.28)

Methods of Testing and Tolerances for Single Jute Yarn (Revision of ASTM D 541-52; ASA L14.34)

Methods of Testing Woven Asbestos Cloth (Revision of ASTM D 577-52; ASA L14.35)

Methods of Test for Clean Wool Content of Wool in the Grease (Revision of ASTM D 584-52T; ASA L14.40)

Methods of Testing Asbestos Tubular Sleeving (Revision of ASTM D 628-52; ASA L14.41)

Methods of Testing and Tolerances for Jute Rope and Plied Yarn for Electrical and Packing Purposes (Revision of ASTM D 681-52; ASA L14.44)

Methods of Testing and Tolerances for Rope (Leaf and Bast Fibers) (Revision of ASTM D 738-52; ASA L14.45)

Methods of Testing and Tolerances for Spun, Twisted or Braided Products Made from Flax, Hemp, Ramie, or Mixtures Thereof (Revision of ASTM D 739-52; ASA L14.46)

Recommended Practice for Universal System of Yarn Numbering (Revision of ASTM D 861-52; ASA L14.48)

Methods of Test for Small Amounts of Copper and Manganese in Textiles (Revision of ASTM D 377-52T; ASA L14.49)

Methods of Testing Felt (Revision of ASTM D461-50; ASA L14.52-1951)
Sponsors: American Society for Testing Materials; American Association of Textile Chemists and Colorists

HIGHLIGHTS OF PROJECT NEWS

These news briefs are condensed from reports presented by chairmen of the Standards Boards at a meeting of ASA's Standards Council April 2, 1953. The Boards are in charge of projects under ASA procedures in specific fields. Part 2 will be published in May.

PART I

Chemical Industry Advisory Board—(J. G. Henderson, chairman)

The Chemical Industry Advisory Board does not of itself supervise sectional committee projects or offer standards for approval by ASA. Its subcommittees are study groups for the development of recommendations on problems before sectional committees under other supervision or of direct interest in the construction, operation, and maintenance of the plants of the Chemical Industry itself.

An active group of subcommittees covers stainless steel pipe and fittings, stainless steel analyses, valves and fittings for fluids in process lines, and unfired pressure vessel code. In addition, a new subcommittee on welding was authorized early this year and has been given the following scope: "Quality control requirements and practices for the welding of stainless steel."

The first approach to this problem was from the viewpoint of developing a manual for the use of fabricators. It became evident that such an undertaking involved many problems of an extremely complex nature. It was therefore decided to establish the welding subcommittee to gather, study, and correlate data from industry on welding procedure under the scope as stated. The committee may possibly recommend the publication of its findings.

Two new subjects were listed at the Board's January 9 meeting. The first concerns an investigation of various means of meeting the shortage of Columbium as a stabilizing element in Austenitic Stainless Steels. The goal in this undertaking is to find, if possible, a single substitute material that would be amenable to welding and that would provide a satisfactory order of corrosion resistance without subsequent heat treatment. This subject is scheduled for further consideration at the April meeting of the CIAB.

The second subject has to do with the study and solution of the difficulties encountered when Code-approved vessels of wrought materials have attached parts of cast materials. In such cases it is not uncommon for purchase specifications to require identical chemical composition for both the cast and wrought material. This may be a problem for study jointly with the ASME Boiler Code Committee.

There seems to be a misunderstanding of the scope and the import to American industry of international activities coming under the International Organization for Standardization. It has been suggested that a study of those activities as they may be of interest to the chemical industry be made by the ASA staff. Following the presentation of that study, the CIAB will sponsor a general conference of organizations within the chemical industry for the purpose of informing such groups on the objects and procedures of ISO. The desirability of possible American participation can then be properly determined.

Construction Standards Board—(Morgan Strong, chairman)

Hoping to develop a well-rounded group of standards for the benefit of the entire construction industry and the public at large, the Board has considered adding a number of subjects to its program. Those given preliminary consideration include vapor barriers; hardware for interior stairs; doors, windows, and bucks; removable interior partitions; specifications for soil testing; refractory products; thermal insulating materials; heating and refrigerating installations; acoustical materials; paint and painting; and iron and steel components, among others.

Specifications are available for some of the materials included in this list, but in most cases there are no application or installation standards for them. Architects, contractors, building officials, and the public at large have made good use of the application standards that have already been developed. With this in mind, the Board has authorized a subgroup to determine whether similar standards could be developed for any of the new subjects under consideration. Application standards have already been adopted for plastering, interior limestone, marble, and gypsum wallboard.

Consumer Goods Standards Board—(Richard S. Burke, chairman)

The development of standards for ultimate consumer goods is not a case of merely finding a meeting of minds of producers and consumers. There are many groups to be satisfied. Most of these have never worked cooperatively before. They are accustomed to looking at their own problem directly without considering the relationship of their problem to the problems of other groups, such as distributors, finishers, technologists, the ultimate consumer, and many others.

Furthermore, while the attention of CGSB is being centered on the development of standards for the ultimate consumer, there are only a few organized and articulate consumer groups. This places great burdens on one or two consumer organizations which have been active, thereby making progress rather slow. From these remarks, it should not be assumed that progress is not being made.

A special letter ballot of Standards Council was taken a few months ago

on the question of approval of standards on rayon and acetate fabrics as American Standard. These standards are of a pioneering nature. It is believed that those who receive copies will be surprised at the extent of work and of the significance of the standards to the entire textile industry and consumer groups. For the first time a complete group of performance requirements and test methods has been assembled in logical form to provide technical information to the manufacturer, distributor, and consumer, concerning goods bought over the counter by the ultimate consumer. Much of the technology incorporated in the standards is not new but it had been brought together in a completely usable form to the advantage of all concerned.

This project does not stand alone. As a result of it, a group has seen the possibility of using similar methods and similar technology to obtain standards sorely needed in the carrying out of its own activities. This refers to the request of the American Hotel Association for standards for textile fabrics used in the manufacture of the many articles purchased for use in hotel business. In accordance with normal ASA procedures the Consumer Goods Standards Board, through ASA headquarters, called a conference of all groups concerned. About forty people attended this conference, and they unanimously agreed that a project of the type required by the hotel association would be of considerable value, but recommended that the project be limited to the development of standards for hotels, hospitals and other institutions rather than to the entire consuming public. It is interesting to note, however, that representatives of the ultimate consumer who attended the conference voted for initiation of this project in the expressed belief that any standards developed for hotel, hospital, and institutional uses would prove to be of value to the ultimate consumer.

While the rayon and hotel projects are only two in number, they represent a tremendous forward movement in consumer goods standardization work. Their educational value cannot be estimated, bringing together as they do some 20 to 30 organizations, that previously had never worked together cooperatively before.

It is hoped, that in the not too distant future, the ASA will be able to publish a list of consumer standards approved as American Standard in a form similar to the list of American Safety Standards. When that is done, the members of ASA and others, will realize that much has been accomplished.

Part II of this article in the May issue will give you reports from the Electrical, Graphic, Highway Traffic, Mechanical, Mining, Miscellaneous, Photographic, and Safety Standards Boards.

News of American Standard Projects

Power-Operated Radio Receiving Appliances, C65—

Sponsor: Underwriters' Laboratories, Inc.

Since publication of the American Standard for Power-Operated Radio Receiving Appliances, in October, 1952, it has been noted that some contemplated changes were overlooked in editing the previous edition. Sticker inserts have been prepared to make these changes.

Paragraphs 27, 64, and 118 have been amended to change the abbreviation of American Wire Gauge from "Awg" to "AWG"; and paragraphs 126, 128-130, and 161-162 have been amended to change "cycles" to "cycles per second."

Copies of the stickers to be inserted in your copy of the standard can be obtained from ASA.

Acoustical Measurements and Terminology, Z24—

Sponsor: Acoustical Society of America

The newly organized Writing Group on Ultrasonics Diathermy is already actively at work on its assignment (STDZN, March 1953, p 93). The problem has been analyzed and Group members have been asked to answer a number of questions in order to determine the scope of the work to be undertaken. The group expects to report at a meeting of the sectional committee in May.

Small Tools and Machine Tool Elements, B5—

Sponsors: Metal Cutting Tool Institute; Society of Automotive Engineers; National Machine Tool Builders' Association; The American Society of Mechanical Engineers.

A new edition of the American Standard Adjustable Adapters for Multiple Spindle Drilling Heads has been circulated to the sectional committee for approval. This is a revision of American Standard B5.11-1937.

G. B. Butterfield—With deep regret the American Standards Association announces the death of G. B. Butterfield, a member of ASA's Board of Directors. Mr Butterfield died suddenly April 1 of a cerebral hemorrhage.

Mr Butterfield was secretary of the Hartford Accident and Indemnity Company and had been nominated by the National Safety Council as a member of the ASA Board.

He will be severely missed in the nation's safety program and by the American Standards Association. As a member of the Engineering Section and the Advisory Committee of the Accident Prevention Division, Association of Casualty and Surety Companies, Mr Butterfield had an important influence on the development of safety standards to meet the needs of industry. His interest and encouragement helped to bring about organization of the safety code program under the procedures of the American Standards Association. His continued interest has stimulated the growth of the program.

Mr Butterfield had been with the Hartford Accident and Indemnity Company since 1926 and had been active in many nationally important safety organizations. These included the President's Highway Safety Conference, the President's Conference on Industrial Safety, and the Engineers Committee of Underwriters' Laboratories, Inc. He had been a member of ASA's Board of Directors since 1951.

Gaillard Seminar, June 1953

Dr John Gaillard, mechanical engineer on the staff of the American Standards Association and lecturer at Columbia University, will hold his next five-day private seminar on industrial standardization from June 22 through 26, 1953, in the Engineering Societies Building, 29 West 39 Street, New York City.

The Gaillard Seminars were started in 1947 upon request from companies for assistance in the organization of their standardization work and the training of their men in writing standard specifications. More than 100 organizations have been represented so far.

The June, 1953, session will consist of ten conferences, one in the morning (9:30 to 12:00) and one in the afternoon (1:30 to 4:00), Monday through Friday. At each conference a subject on the seminar program will be presented by Dr Gaillard and then discussed around the table.

For further details and registration, write to Dr John Gaillard, 400 West 118 Street, New York 27, N. Y., or telephone him at the ASA office in New York, MUrray Hill 3-3058.

• • **Roger E. Gay,** president of the American Standards Association, will give one of the principal talks at the convention of the National Association of Purchasing Agents in Los Angeles, May 25.

Petroleum Tables

(*Continued from page* 107)

Not all of the tables are available in each of the three editions. Detailed Tables of Contents for the various editions are available from ASTM. For bench usage individual tables may be purchased.

All three editions may be secured from Headquarters of the American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa. Prices are: American Edition, $8.75 (544 pages); British Edition, $7.00 (432 pages); Metric Edition, $7.70.

• • **American Standards** will remain in effect for a maximum of five years instead of three before they come up for review. This action has been approved by both the Standards Council and the Board of Directors. Any standard that has not been revised or reaffirmed within a period of five years must be reviewed by the committee in charge and reaffirmed as up-to-date, revised, or withdrawn. Earlier revision may be undertaken at any time the need is indicated.

Wood Poles

(*Continued from page* 117)

From these various reports, it is apparent that the fiber stress values have been used both for design and dimension purposes. They were not intended, however, as material requirements. The fiber stresses as listed in American Standard O5.1-1948, therefore, are not required for each and every pole of the particular species involved. The consumer has every right to expect, however, that by-and-large the majority of the poles supplied will have a fiber stress equal to or better than the chosen standards.

Since the adoption of the American Standard fiber stress for southern pine in 1931 the only adverse experience reported to ASA by any pole-using power, telephone, or transit utility has been due to catastrophic storms. More than 100 million poles have been produced under American Standard fiber stresses since that time. It goes without saying that the men who set up the original strength requirements must have done an excellent job. This goes for all others responsible for this standard, because the whole system of requirements and dimensions covering wood poles of the several standard species has worked out extremely well.

Under present use conditions some change in specification arrangement may be considered to prevent misinterpretation of the significance of these fiber stress values. Any proposal for such action will be handled through consultation and action by the whole Committee.